Australian Government

RII09 Resources and Infrastructure Industry Training Package

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INDUSTRY SKILLS COUNCILS
Creating Australia's Future

CONTENTS

Introduction to the Industry **97**
Preliminary Information **101**
History **103**
Mapping to Previous Training Package **105**
Employability Skills **121**
Qualifications Pathways **124**
Skill Sets in this Training Package **124**
Summary of AQF Qualifications in this Training Package **125**
Overview **128**
Assessment Guidelines **137**
Pathways **170**
Competency Standards **178**
RII10109 Certificate I in Resources and Infrastructure Operations **185**
RII20109 Certificate II in Resources and Infrastructure Work Preparation **190**
RII20209 Certificate II in Surface Extraction Operations **196**
RII20309 Certificate II in Underground Coal Mining **202**
RII20409 Certificate II in Underground Metalliferous Mining **209**
RII20509 Certificate II in Resource Processing **215**
RII20609 Certificate II in Mining Field/Exploration Operations **222**
RII20712 Certificate II in Civil Construction **227**
RII20809 Certificate II in Bituminous Surfacing **233**
RII20909 Certificate II in Drilling Operations **238**
RII21009 Certificate II in Drilling Oil/Gas (Off shore) **243**
RII21109 Certificate II in Drilling Oil/Gas (On shore) **248**
RII30112 Certificate III in Surface Extraction Operations **253**
RII30212 Certificate III in Underground Coal Operations **260**
RII30311 Certificate III in Underground Metalliferous Mining **266**
RII30411 Certificate III in Resource Processing **273**
RII30509 Certificate III in Mining Exploration **282**
RII30611 Certificate III in Small Mining Operations **287**
RII30709 Certificate III in Mine Emergency Response and Rescue **293**
RII30809 Certificate III in Civil Construction Plant Operations **298**
RII30912 Certificate III in Civil Construction **304**
RII31609 Certificate III in Trenchless Technology **328**
RII31209 Certificate III in Civil Foundations **334**
RII31809 Certificate III in Drilling Operations **340**
RII31909 Certificate III in Drilling Oil/Gas (Off shore) **346**
RII32009 Certificate III in Drilling Oil/Gas (On shore) **351**
RII40109 Certificate IV in Surface Extraction Operations **356**
RII40212 Certificate IV in Surface Coal Mining (Open Cut Examiner) **363**
RII40311 Certificate IV in Metalliferous Mining Operations (Underground) **369**
RII40412 Certificate IV in Underground Coal Operations **375**
RII40509 Certificate IV in Resource Processing **381**
RII40609 Certificate IV in Civil Construction Operations **387**
RII40712 Certificate IV in Civil Construction Supervision **394**
RII40809 Certificate IV in Civil Construction Design **402**
RII40909 Certificate IV in Drilling Operations **409**
RII41009 Certificate IV in Drilling Oil/Gas (Off shore) **415**
RII41109 Certificate IV in Drilling Oil/Gas (On shore) **420**

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RII50109 Diploma of Surface Operations Management 425
RII50209 Diploma of Underground Metalliferous Mining Management 431
RII50309 Diploma of Minerals Processing 436
RII50409 Diploma of Civil Construction Management 441
RII50509 Diploma of Civil Construction Design 447
RII50609 Diploma of Drilling Operations 455
RII50709 Diploma of Drilling Oil/Gas (Off shore) 460
RII50809 Diploma of Drilling Oil/Gas (On shore) 465
RII50912 Diploma of Underground Coal Mining Management 470
RII60109 Advanced Diploma of Metalliferous Mining 475
RII60209 Advanced Diploma of Extractive Industries Management 481
RII60312 Advanced Diploma of Underground Coal Mining Management 486
RII60409 Advanced Diploma of Drilling Management 491
RII60509 Advanced Diploma of Civil Construction Design 495
RII60609 Advanced Diploma of Civil Construction 500
RII60709 Advanced Diploma of Surface Coal Mining Management 505
RIISS00001 Skill Set Explosion Protected Diesel Engine Systems Maintenance 510
RIISS00002 Skill Set Leading Hand 513
RIISS00003 Skill Set Mine Surveying 515
RIISS00004 Skill Set Rouseabout Off Shore Oil and Gas 517
RIISS00005 Skill Set Site Health and Safety Coordinator 518
RIISS00006 Skill Set Supervision of Indigenous Employees 520
RIISS00007 Skill Set Surface Coal Mine Safety 522
RIISS00009 Skill Set Underground Coal Mine Safety 524
RIISS00008 Skill Set Surface Shotfiring 526
RIISS00010 Skill Set Underground Shotfiring - Coal 527
RIISS00011 Skill Set Underground Shotfiring - Metalliferous 528
RIISS00013 Skill Set Work Zone Traffic Control - Implement Traffic Control Guidance Plan 530
RIISS00017 Skill Set Work Zone Traffic Control Guidance Plan - Developer 532
RIISS00012 Skill Set Work Zone Traffic Control - Auditor/Inspector 534
RIISS00014 Skill Set Work Zone Traffic Control - Road Labourer 536
RIISS00016 Skill Set Work Zone Traffic Control - Traffic Controller 538
RIISS00015 Skill Set Work Zone Traffic Control - Supervisor 540
RIIBEF201B Plan and organise work 542
RIIBEF202A Identify and rectify site operating problems 550
RIIBEF301A Run on-site operations 562
RIIBEF302A Monitor site production activities 572
RIIBEF401A Manage non-routine, complex technical situations 582
RIIBEF402A Supervise on-site operations 590
RIIBEF601A Conduct business negotiations 599
RIIBEF602A Establish and evaluate operational performance management systems 608
RIIBEF603A Manage decision making process 619
RIIBEF604A Conduct feasibility study 629
RIIBEF605A Resource site plans and objectives 639
RIIBHD301A Conduct surface blast hole drilling operations 649
RIIBHD302A Conduct underground development drilling 664
RIIBHD303A Conduct long hole drilling 675
RIIBHD304B Set-up and prepare for open cut drilling operations 686
RIIBHD305 Conduct down-hole hammer drilling 695
RIIBHD401A Supervise blast hole drilling operations 703
RIIBHD501A Manage blast hole drilling operations 715
RIIBLA201A Support shotfiring operations 728

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RIIBLA202B Support underground shotfiring operations....737
RIIBLA203B Conduct mobile mixing of explosives....744
RIIBLA204A Store, handle and transport explosives in underground coal mines....754
RIIBLA205A Store, handle and transport explosives....765
RIIBLA301A Conduct surface shotfiring operations....777
RIIBLA302A Conduct shotfiring operations in underground coal mines....791
RIIBLA303A Conduct underground development shotfiring....807
RIIBLA304A Conduct underground production shotfiring....822
RIIBLA305A Conduct secondary blasting....837
RIIBLA306A Conduct accretion firing....849
RIIBLA307A Conduct blast survey....858
RIIBLA401A Manage blasting operations....865
RIIBLA402A Monitor and control the effects of blasting on the environment....879
RIIBLA601A Design surface blasts....889
RIIBLA602A Establish and maintain a blasting system....900
RIICAR301A Rehabilitate exploration site....911
RIICAR302A Rehabilitate small mine site....920
RIICAR401A Supervise rehabilitation operations....927
RIICBM201A Strip pile heads....936
RIICBM301A Maintain concrete bridges....944
RIICBM302A Install pre-cast girders....952
RIICBM303A Install pre-cast parapets....961
RIICBM304A Operate a bridge inspection unit....970
RIICBM305A Install pre-cast concrete bridge decks....979
RIICBM306A Undertake concreting work on concrete bridges....988
RIICBM307A Construct formwork and false work on concrete bridges....997
RIICBS201A Conduct tack coat spraying operations....1008
RIICBS202A Hand spread asphalt....1017
RIICBS203A Safely handle bituminous materials....1026
RIICBS204A Conduct aggregate spreader box operations....1034
RIICBS205A Roll aggregate in sprayed sealing operations....1043
RIICBS206A Conduct pavement sweeping operations....1052
RIICBS207A Take samples of materials used in road surfacing....1062
RIICBS208A Conduct road maintenance operations....1071
RIICBS301A Conduct profile planer operations....1081
RIICBS302A Conduct paver screeding operations....1092
RIICBS303A Conduct materials transfer vehicle operations....1103
RIICBS304A Compact asphalt with rollers....1112
RIICBS305A Conduct asphalt paver operations....1121
RIICBS306A Conduct slurry sealing operations....1131
RIICBS307A Conduct bitumen sprayer operations....1140
RIICBS308A Load aggregate using a purpose built loader....1152
RIICBS309A Conduct self-propelled aggregate spreader operations....1162
RIICBS310A Conduct patching operations....1172
RIICBS311A Produce asphalt products....1181
RIICBS312A Conduct bitumen tanker operations....1190
RIICBS401B Apply the principles of asphalt paving and compaction....1200
RIICBS402B Apply the principles for the application of bituminous sprayed treatmen1209
RIICBS403B Apply the principles for the application of polymer modified binder....1220
RIICBS404B Apply the principles for the selection and use of bituminous emulsion....1230
RIICBS405A Apply the principles for the application of slurry surfacing....1241
RIICBS406A Apply the principles of pavement profiling using a profiler....1252
RIICBS407A Apply the principles for the manufacture and delivery of hot mix asphalt1262

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RIICBS408A Apply the principles for the manufacture of cold mix 1273
RIICBS409A Apply the principles for the manufacture of polymer modified binder 1282
RIICBS410A Apply the principles for the manufacture of bituminous emulsion 1292
RIICBS411A Apply the principles for the manufacture of slurry surfacing 1302
RIICCM201A Carry out measurements and calculations 1312
RIICCM202A Identify, locate and protect underground services 1319
RIICCM203A Read and interpret plans and specifications 1328
RIICCM204A Place and fix reinforcement materials 1335
RIICCM205A Carry out manual excavation 1344
RIICCM206A Support plant operations 1352
RIICCM207A Spread and compact materials manually 1360
RIICCM208A Carry out basic levelling 1368
RIICCM209A Carry out concrete work 1377
RIICCM210A Install trench support 1387
RIICCM211A Erect and dismantle temporary fencing and gates 1395
RIICCM301A Construct and dismantle fences and gates 1404
RIICCR401A Develop and maintain positive community relations 1413
RIICCR501A Conduct sales in construction materials operations 1424
RIICCR601A Manage customer relationships 1435
RIICFW301A Construct underpinning 1445
RIICFW302A Install temporary and permanent rock anchors 1454
RIICFW303A Install primary ground support 1463
RIICFW304A Conduct pile driving operations 1473
RIICFW305A Conduct cast in-situ pilings operations 1483
RIICFW306A Direct pile driving operations 1492
RIICFW307A Direct cast in-situ piling operations 1504
RIICOM201A Communicate in the workplace 1516
RIICOM301B Communicate information 1524
RIICOM302A Communicate workplace information 1535
RIICPL301A Install water mains pipelines 1545
RIICPL302A Install stormwater systems 1555
RIICPL303A Install sewer pipelines 1564
RIICPL304A Install pre-cast gully pits 1573
RIICPL305A Install pre-cast access chambers 1581
RIICPL401A Apply the principles for the installation of underground service using open excavation 1589
RIICRC201A Repair potholes 1602
RIICRC202A Install signs 1610
RIICRC203A Install sub-soil drainage 1618
RIICRC204A Install and maintain roadside fixtures 1626
RIICRC205A Install utility poles 1636
RIICRC206A Install pre-cast concrete crash barriers 1644
RIICRC207A Install noise barriers 1652
RIICRC208A Lay pipes 1660
RIICRC209A Lay reinforced concrete box culverts 1670
RIICRC301A Maintain drainage systems 1679
RIICRC302A Place and form concrete kerb, channel and fixtures 1688
RIICRC303A Lay pavers 1698
RIICRC304A Maintain sealed roads 1707
RIICRC305A Conduct road construction paver screeding operations 1716
RIICRC306A Conduct earthworks 1726
RIICRC307A Conduct road pavement construction 1735
RIICRC308A Conduct paver operations 1745

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RIICRC309A Conduct stabiliser operations 1754
RIICRC310A Construct and maintain roads 1764
RIICRC311 Conduct concrete road paver operations 1774
RIICRC312 Setup and maintain concrete paver stringlines 1782
RIICRC313 Conduct concrete road curing and texturing operations 1790
RIICRC314 Handle concrete materials 1798
RIICRC315 Use concreting materials and equipment 1807
RIICRC316 Place and compact concrete 1815
RIICRC317 Finish concrete pavements 1825
RIICRC318 Cure Concrete 1834
RIICRC319 Saw and cut concrete pavements to initiate planned cracks 1843
RIICRC320 Seal concrete pavements 1851
RIICRC321 Use automated paving guidance systems 1859
RIICRC322 Receive, check and record concrete deliveries 1867
RIICRC323 Insert tie bars in fresh concrete 1875
RIICRC401A Apply the principles of flexible pavement construction 1883
RIICRC402A Apply the principles of rigid pavement construction 1895
RIICRC403A Apply the principles of the stabilisation of materials 1907
RIICRC404A Inspect and report on pavement condition 1918
RIICRC405A Carry out pavement condition measurement 1930
RIICRC406B Apply the principles of pavement maintenance 1939
RIICRM201A Escort mobile road marking operations 1950
RIICRM202A Handle and store road marking materials 1959
RIICRM203A Conduct pedestrian road marking operations 1967
RIICRM204A Prepare surface for road marking 1977
RIICRM205A Conduct road marking measuring operations 1986
RIICRM206A Conduct airless and atomised spraying operations 1994
RIICRM207A Install raised pavement markers 2003
RIICRM301A Conduct ride on road marking operations 2012
RIICRM302A Conduct long line road marking operations 2022
RIICRM303A Conduct thermo plastic road marking operations 2032
RIICSG401A Apply the principles of civil concrete structures construction 2041
RIICSG402A Apply the principles of civil steel structures construction 2053
RIICSG403A Apply the principles of civil timber structures construction 2064
RIICSG404A Apply the principles of civil masonry, crib and gabion structure construction 2075
RIICSG405A Carry out inspections of civil structures 2086
RIICSG406A Apply principles of maintenance of civil structures 2099
RIICTB201A Maintain timber bridges 2111
RIICTB202A Apply bridge durability treatment 2120
RIICTB203A Produce drawings and sketches 2131
RIICTB301A Undertake visual inspection 2139
RIICTB302A Install temporary support members 2147
RIICTB303A Erect a temporary modular support system (bailey) on an existing bridge 2155
RIICTB304A Install or replace sub-structure members 2165
RIICTB305A Install or replace super-structure members 2175
RIICTB306A Splice and connect timber members 2186
RIICTB307A Assemble a temporary modular bridge 2196
RIICTB308A Install or replace truss members 2206
RIICTB309A Construct, maintain and remove coffer dams 2214
RIICTB310A Construct specialised timber deck systems 2223
RIICTC301A Install tunnelling constructions services 2232
RIICTC302A Line tunnel 2240

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RIICTC303A Excavate tunnel by machine 2249
RIICTC304A Muck out tunnel earthworks 2258
RIICTC305A Construct portals 2266
RIICTC401A Apply the principles of tunnel construction 2275
RIICTT301A Conduct fluid assisted directional boring 2286
RIICTT302A Conduct impact moling, ramming and augering 2296
RIICTT303A Control micro tunnelling and pipe-jacking 2306
RIICTT304A Undertake on-line replacement for existing pipeline systems 2316
RIICTT305A Undertake localised repair and sealing of existing pipeline systems 2326
RIICTT306A Install cure in-place linings for existing pipeline systems 2336
RIICTT307A Spray linings for existing pipeline systems 2346
RIICTT308A Install close-fit linings for existing pipeline systems 2356
RIICTT309A Install slip lining in existing pipeline systems 2366
RIICTT310A Renovate large diameter pipes and chambers 2376
RIICTT401A Apply the principles for the installation of underground services using trenchless technology 2385
RIICTT402A Apply the principles for the repair and rehabilitation of underground services using trenchless technology 2398
RIICWD501A Prepare detailed design of foundations 2411
RIICWD502A Prepare detailed design of lighting 2423
RIICWD503A Prepare work zone traffic management plan 2435
RIICWD504A Prepare detailed design of environmental controls 2447
RIICWD505A Prepare detailed design of landscaping 2459
RIICWD506A Prepare detailed design of canals 2471
RIICWD507A Prepare detailed geotechnical design 2483
RIICWD508A Prepare detailed design of rural roads 2495
RIICWD509A Prepare detailed design of urban roads 2507
RIICWD510A Prepare detailed design of busways 2519
RIICWD511A Prepare detailed design of sub-divisions 2531
RIICWD512A Prepare detailed design of motorways and interchanges 2543
RIICWD513A Prepare detailed design of rail civil infrastructure 2555
RIICWD514A Prepare detailed design of dams 2567
RIICWD515A Prepare detailed design of airfield civil works 2579
RIICWD516A Prepare detailed design of bicycle ways 2591
RIICWD517A Prepare detailed design of industrial hardstands 2603
RIICWD518A Prepare detailed design of open car parks 2615
RIICWD519A Prepare detailed design of inter modal facilities civil works 2627
RIICWD520A Prepare detailed design of rigid pavements 2639
RIICWD521A Prepare detailed design of flexible pavements 2651
RIICWD522A Prepare stabilised material mix design 2663
RIICWD523A Prepare asphalt mix design 2675
RIICWD524B Prepare design of sprayed seal surfacing 2687
RIICWD525B Select pavement surfacing 2699
RIICWD526A Prepare detailed traffic analysis 2711
RIICWD527A Prepare detailed design of traffic signals 2723
RIICWD528A Prepare detailed design of traffic management systems 2735
RIICWD529A Prepare detailed design of underground services 2747
RIICWD530A Prepare detailed design of surface drainage 2759
RIICWD531A Prepare detailed design of subsurface drainage 2771
RIICWD532A Prepare detailed design of tunnels 2783
RIICWD533A Prepare detailed design of civil concrete structures 2795
RIICWD534A Prepare detailed design of civil steel structures 2807
RIICWD535A Prepare detailed design of civil timber structures 2819

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RIICWD536A Prepare detailed design of civil masonry, crib and gabion structures.....2831
RIICWD537A Prepare detailed design of marine structures civil works.....2843
RIICWD601A Manage the civil works design process.....2855
RIICWM401B Supervise civil works.....2866
RIICWM402A Supervise civil works contractors.....2877
RIICWM501A Implement civil construction plan.....2888
RIICWM502A Implement civil works maintenance program.....2900
RIICWM503A Prepare civil works cost estimate.....2912
RIICWM504A Prepare civil works bill of quantities.....2921
RIICWM505A Prepare civil works schedule of rates.....2931
RIICWM601A Establish civil constructions plans.....2942
RIICWM602A Establish civil works maintenance programs.....2955
RIIDES301 Inspect, test and maintain diesel engine systems and their ancillary systems2966
RIIDES302 Inspect, test and maintain joints on diesel engine systems.....2978
RIIDES303 Inspect, test and maintain cooling systems on diesel engine systems.....2989
RIIDES304 Inspect, test and maintain inlet systems on diesel engine systems.....2999
RIIDES305 Inspect, test and maintain exhaust systems on diesel engine systems.....3012
RIIDES306 Inspect, test and maintain safety shutdown systems on diesel engine systems3025
RIIDES307 Test, determine the cause and rectify excessive emission levels on diesel engine systems.....3038
RIIDML401A Apply the principles of demolitions.....3049
RIIEGS201A Operate in isolated and remote situations.....3058
RIIEGS202B Conduct field work.....3066
RIIEGS301A Operate and maintain instruments and field equipment.....3074
RIIEGS302A Plan and undertake field trip.....3084
RIIEGS303A Provide geological field assistance.....3092
RIIEGS304A Mobilise equipment and materials.....3102
RIIEGS305B Navigate in remote or trackless areas.....3113
RIIEGS306A Prepare drill site.....3122
RIIENV201A Identify and assess environmental and heritage concerns.....3131
RIIENV202A Suppress airborne contaminants.....3139
RIIENV301A Conduct atmospheric monitoring.....3147
RIIENV302A Apply environmentally sustainable work practices.....3154
RIIENV401A Supervise dust and noise control.....3164
RIIENV402A Implement and monitor environmental policies.....3171
RIIENV501A Implement and maintain environmental management plan.....3181
RIIENV502A Undertake process or project environmental impact assessment.....3193
RIIENV601A Establish and maintain the environmental management system.....3203
RIIERR201A Conduct fire team operations.....3217
RIIERR202A Contribute to the control of emergencies and critical situations.....3226
RIIERR203B Escape from hazardous situation unaided.....3237
RIIERR204A Provide aided rescue to endangered personnel.....3245
RIIERR205A Apply initial response First Aid.....3255
RIIERR301A Respond to mine incident.....3263
RIIERR302A Respond to local emergencies and incidents.....3272
RIIERR303A Operate in self-contained regenerative oxygen breathing apparatus.....3280
RIIERR304A Control emergencies and critical situations.....3289
RIIERR305A Control underground fires.....3296
RIIERR306A Conduct underground search.....3307
RIIERR307A Extricate casualties from underground incident.....3316
RIIERR308A Extricate and transport people involved in incidents.....3326
RIIERR309A Establish and operate from fresh air base.....3337
RIIERR310A Provide support for rescue operations.....3346

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RIIERR311A Assess and implement life support systems and stabilise casualties.....3355
RIIERR401B Apply and monitor surface operations emergency preparedness and response systems 3365
RIIERR402A Apply and monitor underground coal mine emergency preparedness and response systems 3377
RIIERR403A Lead rescue team 3388
RIIERR404A Apply and monitor underground metalliferous mine emergency preparedness and response systems 3398
RIIERR501A Implement underground coal mine emergency preparedness and response systems 3409
RIIERR503A Implement emergency preparedness and response systems 3421
RIIERR504A Manage major incidents and emergencies.....3435
RIIERR601A Establish and maintain mine emergency preparedness and response systems3450
RIIERR602A Establish and maintain underground coal mine emergency preparedness and response systems.....3465
RIIFIA401A Manage financial records 3481
RIIGOV201A Comply with site work processes/procedures.....3489
RIIGOV401B Apply, monitor and report on compliance systems.....3497
RIIGOV501A Identify, implement and maintain legal compliance requirements 3506
RIIGOV601A Establish, maintain and develop a statutory compliance management system.....3519
RIIHAN201A Operate a forklift.....3534
RIIHAN202A Handle and store cargo 3542
RIIHAN203A Conduct lifting operations 3550
RIIHAN204A Load and unload cargo/goods 3558
RIIHAN205A Secure cargo.....3568
RIIHAN206A Transport plant, equipment and personnel 3578
RIIHAN207A Operate personnel and materials hoists 3592
RIIHAN208A Perform dogging.....3603
RIIHAN209A Perform basic rigging.....3612
RIIHAN210A Perform intermediate rigging operations.....3621
RIIHAN211A Conduct basic scaffolding operations 3630
RIIHAN212A Conduct non-slewing crane operations 3641
RIIHAN213A Work effectively in the drilling industry 3651
RIIHAN301B Operate elevating work platform 3658
RIIHAN302A Conduct intermediate scaffolding operations 3667
RIIHAN304A Conduct slewing crane operations 3676
RIIHAN305A Operate a gantry or overhead crane.....3686
RIIHAN306A Carry out lifting using multiple cranes 3694
RIIHAN307A Operate a vehicle loading crane 3704
RIIHAN308A Load and unload plant.....3716
RIIHAN309A Conduct telescopic materials handler operations.....3724
RIIHAN310A Conduct crane operations underground 3734
RIIHAN401A Organise and monitor wharf/terminal operations 3744
RIIHAN311A Conduct operations with integrated tool carrier 3753
RIIHAN402A Process movement of containers and cargo 3765
RIIIMG301A Maintain site records 3773
RIILAT401A Provide leadership in the supervision of Indigenous employees.....3782
RIILAT601A Manage group processes.....3798
RIIMCO201A Conduct spreader operations 3810
RIIMCO202A Conduct mobile slew conveyor operations 3817
RIIMCO301A Conduct control centre operations.....3826
RIIMCO302A Conduct surface miner operations.....3834

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RIIMCO303A Conduct auger miner operations....3841
RIIMCP202A Conduct rail dispatch operations....3848
RIIMCP301A Monitor plant operations for coal preparation....3855
RIIMCU201A Operate power tram....3864
RIIMCU202A Conduct tracked vehicle/plant operations....3871
RIIMCU203A Conduct wheeled vehicle operations (non-articulated)....3879
RIIMCU204A Conduct wheeled vehicle operations (articulated)....3887
RIIMCU205A Conduct rotational drilling....3896
RIIMCU206A Install, maintain and recover gas drainage systems....3904
RIIMCU207A Install, maintain and recover electrical services....3911
RIIMCU208A Conduct basic strata control operations....3918
RIIMCU209A Conduct roadway maintenance....3927
RIIMCU210A Conduct stonedusting operations....3934
RIIMCU211A Install and maintain explosion barriers....3942
RIIMCU212A Construct and maintain basic ventilation devices....3949
RIIMCU213A Conduct feeder breaker operations....3956
RIIMCU214A Conduct face ventilation operations....3964
RIIMCU215A Operate longwall ancillary equipment....3971
RIIMCU216A Maintain lamp cabin operations....3978
RIIMCU301A Conduct specialised strata control operations....3985
RIIMCU302A Construct and maintain ventilation devices....3993
RIIMCU303A Conduct continuous miner operations....4000
RIIMCU304A Conduct shuttle car operations....4008
RIIMCU305A Conduct outburst mining operations....4015
RIIMCU306A Conduct shearer operations....4023
RIIMCU307A Conduct longwall face equipment operations....4030
RIIMCU308A Install and recover longwall equipment....4038
RIIMCU309A Operate breaker line supports....4047
RIIMCU310A Conduct flexible conveyor train (FCT) operations....4054
RIIMCU311A Monitor control processes....4061
RIIMCU401A Conduct special roadway operations....4068
RIIMCU402A Apply spontaneous combustion management measures....4076
RIIMCU403A Apply and monitor the gas management plan....4085
RIIMCU404A Apply and monitor the gas drainage management plan....4102
RIIMCU405A Apply and monitor the outburst management plan....4115
RIIMCU406A Apply and monitor the inrush management plan....4127
RIIMCU407A Apply and monitor the strata management plan....4139
RIIMCU408A Apply the spontaneous combustion management plan....4152
RIIMCU501A Implement the spontaneous combustion management plan....4164
RIIMCU502A Implement the gas management plan....4178
RIIMCU503A Implement the gas drainage management plan....4195
RIIMCU504A Implement the outburst management plan....4211
RIIMCU505A Implement the inrush management plan....4225
RIIMCU506A Implement strata management plan....4239
RIIMCU601A Establish and maintain the spontaneous combustion management plan 4253
RIIMCU602A Establish and maintain the gas management system....4268
RIIMCU603A Establish and maintain the gas drainage management plan....4286
RIIMCU604A Establish and maintain the outburst management plan....4302
RIIMCU605A Establish and maintain the inrush management plan....4317
RIIMCU606A Establish and maintain the mining method and strata management systems4332
RIIMEX201A Suppress dust in open-cut environment....4347
RIIMEX202A Install open-cut mine ground support....4355
RIIMEX203B Break oversize rock....4365

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RIIMEX204A Conduct workboat/barge operations....4373
RIIMEX301A Conduct Dredging Operations....4381
RIIMEX302B Assess ground conditions....4391
RIIMEX401A Apply pit plan....4401
RIIMEX402A Supervise dredging operations....4409
RIIMEX403A Apply the principles of canal construction....4416
RIIMEX404B Apply and monitor systems for stable mining....4425
RIIMEX405A Apply and monitor systems and methods of surface coal mining....4435
RIIMEX406A Apply and monitor mine transport system and production equipment..4446
RIIMEX501A Implement pit plan....4456
RIIMEX502A Implement systems and methods of mining....4467
RIIMEX503A Manage dredging operations....4478
RIIMEX601A Plan pit development....4487
RIIMEX602A Establish and maintain surface mining ground control and slope stability systems....4499
RIIMEX603A Establish and maintain underground mining ground control and stable mining systems....4511
RIIMEX604A Establish and maintain surface product haulage and transport systems 4525
RIIMEX605A Establish, implement and maintain operational management plans....4537
RIIMPG201A Connect and disconnect refer units....4549
RIIMPG301A Control and monitor automated plant/machinery....4557
RIIMPO201A Operate roller/compactor underground....4567
RIIMPO202A Undertake towing underground....4577
RIIMPO203A Support bucket wheel system operations....4587
RIIMPO204A Conduct conveyor shifting dozer operations....4594
RIIMPO205B Operate roller/compactor....4602
RIIMPO206B Conduct bulk water truck operations....4614
RIIMPO208A Operate support equipment....4623
RIIMPO210A Conduct underground truck operations....4630
RIIMPO301C Conduct hydraulic excavator operations....4641
RIIMPO302B Conduct hydraulic shovel operations....4652
RIIMPO303A Conduct rope shovel operations....4662
RIIMPO304B Conduct wheel loader operations....4672
RIIMPO305B Conduct coal stockpile dozer operations....4684
RIIMPO306A Operate plant/machinery on live stockpiles....4691
RIIMPO307B Conduct wheel grader operations in underground mines....4700
RIIMPO308B Conduct tracked dozer operations....4710
RIIMPO309A Conduct wheeled dozer operations....4722
RIIMPO310B Conduct grader operations....4730
RIIMPO311A Conduct haul truck operations....4741
RIIMPO312A Conduct scraper operations....4755
RIIMPO313B Conduct face loader operations....4766
RIIMPO314A Operate small open cut mine equipment....4775
RIIMPO315A Conduct tractor operations....4782
RIIMPO316A Conduct self propelled compactor operations....4792
RIIMPO317A Conduct roller operations....4802
RIIMPO318B Conduct civil construction skid steer loader operations....4812
RIIMPO319A Conduct backhoe/loader operations....4823
RIIMPO320B Conduct civil construction excavator operations....4835
RIIMPO321B Conduct civil construction wheeled front end loader operations....4847
RIIMPO322A Conduct civil construction tracked front end loader operations....4859
RIIMPO323A Conduct civil construction dozer operations....4871
RIIMPO324A Conduct civil construction grader operations....4882

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RIIMPO325A Conduct civil construction scraper operations....4895
RIIMPO326A Conduct civil construction water cart operations....4907
RIIMPO327A Conduct pipe layer operations....4919
RIIMPO328A Conduct continuous bucket trencher operations....4930
RIIMPO329A Conduct dragline operations....4941
RIIMPO330A Conduct bucket-wheel operations....4949
RIIMPO331A Conduct operations with stockpile dozer....4957
RIIMPO332A Conduct operations with skid steer loader....4964
RIIMPO333 Conduct underground load, haul and dump truck operations....4975
RIIMPO401A Supervise mobile plant operations....4988
RIIMPO402A Apply the principles of earthworks construction....4995
RIIMPO403A Monitor interaction of heavy and light vehicles and mining equipment .5006
RIIMPO501A Implement, monitor, rectify and report on mobile plant and equipment systems....5015
RIIMPO502A Manage the interaction of heavy and light vehicles and mining equipment5024
RIIMPO503A Manage laser levelling of operating plant....5035
RIIMSM301A Establish a mining claim....5045
RIIMSM302A Plan small mine operations....5053
RIIMSM303A Install underground shaft....5063
RIIMSM304A Inspect small mines operations....5070
RIIMSM305A Conduct materials extraction operations underground....5077
RIIMSM306A Design and maintain pillar system and ground control....5087
RIIMSM307A Install and maintain ventilation systems and equipment....5097
RIINHB201B Load, secure and unload drilling equipment and materials....5106
RIINHB202A Set up/pack up drill site....5116
RIINHB203A Support drilling process....5125
RIINHB219A Assist with air drilling....5133
RIINHB205A Assist continuous flight auger drilling....5144
RIINHB206A Assist large diameter auger drilling....5156
RIINHB208B Assist diamond core drilling....5165
RIINHB209A Assist guided boring....5175
RIINHB210B Assist surface directional drilling....5182
RIINHB211A Assist mud rotary drilling....5190
RIINHB213A Assist cable tool drilling....5200
RIINHB216A Assist underground in-seam directional drilling....5209
RIINHB217A Assist horizontal direction drilling....5216
RIINHB218A Assist grouting or cementing operations....5225
RIINHB301A Set up and prepare for drilling operations....5232
RIINHB302A Conduct reaming....5241
RIINHB303A Install product pipe....5249
RIINHB304B Conduct air drilling....5257
RIINHB305A Conduct continuous flight auger drilling....5271
RIINHB306A Conduct large diameter auger drilling....5283
RIINHB307B Conduct conventional core drilling....5293
RIINHB308A Conduct wireline core drilling....5303
RIINHB309A Conduct guided boring....5313
RIINHB310A Conduct surface directional drilling....5322
RIINHB311A Conduct mud rotary drilling....5331
RIINHB312A Conduct raise boring....5341
RIINHB313A Conduct cable tool drilling....5354
RIINHB315A Conduct top-hole hammer drilling....5363
RIINHB316A Conduct underground in-seam directional drilling....5373
RIINHB317A Install underground in-seam directional drilling standpipes....5383

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RIINHB318A Install and operate water and gas control equipment 5393
RIINHB319A Install de-watering conduit and gas drainage equipment 5404
RIINHB320A Construct monitoring bores 5413
RIINHB325A Construct and complete single aquifer production bores 5423
RIINHB322A Construct multiple aquifer production bores 5437
RIINHB323A Conduct horizontal directional drilling 5450
RIINHB324B Carry out grouting or cementing operations 5460
RIINHB401A Plan and supervise the mobilisation of equipment, crew and materials 5469
RIINHB402A Supervise mineral exploration drilling operations 5478
RIINHB403A Supervise geotechnical drilling operations 5488
RIINHB404A Supervise seismic drilling operations 5499
RIINHB405A Supervise water well drilling operations 5510
RIINHB406A Supervise foundation drilling operations 5521
RIINHB407A Supervise horizontal directional drilling operations 5532
RIINHB408A Supervise environmental drilling operations 5543
RIINHB409A Supervise mineral production and development drilling operations 5555
RIINHB410A Supervise surface directional drilling operations 5568
RIINHB411A Construct artesian (flowing) aquifer production bores 5579
RIINHB412B Construct geothermal wells 5594
RIINHB413A Supervise underground in-seam directional drilling operations 5603
RIINHB501A Plan drilling 5615
RIIOGD201A Assist in maintaining rig safety and emergency procedures 5626
RIIOGD202A Carry out equipment and basic rig maintenance 5638
RIIOGD203A Prepare and operate drilling fluid systems 5649
RIIOGD204A Perform rig floor operations 5658
RIIOGD205A Support blow out prevention operations 5671
RIIOGD206A Assist with coal seam gas control 5679
RIIOGD209A Operate and maintain ancillary equipment 5687
RIIOGD301A Conduct and maintain derrick operations 5698
RIIOGD302A Trip casing 5710
RIIOGD303A Trip pipe 5720
RIIOGD304A Apply effective coal seam gas control practices 5729
RIIOGD305A Apply blow out prevention operational procedures 5740
RIIOGD401A Rig up, conduct pre-spud operations and rig down 5753
RIIOGD402A Participate in nippling-up and pressure test 5765
RIIOGD403A Conduct drilling operations 5773
RIIOGD404A Coordinate air drilling operations 5784
RIIOGD405A Carry out well control and blow out prevention 5793
RIIOGD406A Shut down rig 5804
RIIOGD501A Manage rig operations 5811
RIIOGD502A Plan and evaluate rig operations 5820
RIIOGD503A Oversee drilling operations 5828
RIIOGD504A Manage drilling operations 5839
RIIOGD505A Manage drilling induction and orientation 5850
RIIOGD506A Manage rig move and camp move 5859
RIIOGD507A Manage and monitor rig-up and rig-up to spud operations 5867
RIIOGD508A Manage well completion and abandonment 5877
RIIOGD601A Manage multiple drilling operations 5885
RIIOGF201A Carry out deck operations 5895
RIIOGF202A Assist in the transfer of passengers and freight during helicopter operations 5905
RIIOGF203A Contribute to the control of offshore emergencies 5916
RIIOGF301A Monitor, operate and maintain mud pits and equipment 5925
RIIOGF302A Operate drilling fluids and mud pits 5934

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RIIOGN201A Carry out rig lease operations....5944
RIIOGN302A Operate mud pumps....5952
RIIOGN303A Operate mud systems....5959
RIIOHS201A Work safely and follow OHS policies and procedures....5968
RIIOHS202A Enter and work in confined spaces....5979
RIIOHS203A Maintain amenities....5990
RIIOHS204A Work safely at heights....5997
RIIOHS205A Control traffic with stop-slow bat....6006
RIIOHS301A Conduct safety and health investigations....6016
RIIOHS302A Implement traffic management plan....6026
RIIOHS401A Supervise work in confined spaces....6036
RIIOHS402A Examine and maintain mine safety....6047
RIIOHS403A Apply the mine occupational health and safety management plan....6054
RIIOHS404A Implement and monitor health and hygiene management systems....6067
RIIOHS405A Maintain standard procedures and safe working practices....6082
RIIOHS601A Establish and maintain the OHS management system....6090
RIIOHS602A Incorporate health and hygiene factors into mine management....6104
RIIPBE201A Conduct aeration process....6120
RIIPBE202A Conduct digestion process....6129
RIIPBE203A Conduct precipitation operations....6139
RIIPBE204A Conduct reduction process....6149
RIIPBE205B Conduct roasting operations....6160
RIIPBE301A Conduct calcinations activities....6170
RIIPBE302A Conduct bacterial oxidation....6181
RIIPBE303B Conduct filtering process....6192
RIIPBE304B Conduct heavy media separation....6202
RIIPBE305A Conduct high tension separation....6212
RIIPBE306A Conduct leaching process....6221
RIIPBE307A Conduct pressure oxidation....6232
RIIPBE308B Conduct thickening and clarifying process....6243
RIIPBE309B Conduct wet gravity separation....6253
RIIPBE310B Conduct flotation process....6263
RIIPBE311B Conduct magnetic separation....6273
RIIPBP202A Conduct air cleaning activities....6283
RIIPBP301A Process lime products....6294
RIIPBP302A Control operations in acid plant....6306
RIIPEO201B Conduct conveyor operations....6314
RIIPEO202A Provide deck support for conveyor-car high wall mining operations....6325
RIIPEO203B Conduct stacker operations....6333
RIIPEO204A Conduct shore side mooring operations....6340
RIIPEO205A Conduct ship loading operations....6348
RIIPEO206A Lay and recover cables and hoses....6356
RIIPEO207A Coordinate conveyor system shift....6363
RIIPEO208A Extend, retract and maintain conveyor componentry....6371
RIIPEO301A Conduct conveyor-car high wall mining operations....6379
RIIPEO302 Operate and monitor ore car dumpers....6389
RIIPGP201A Conduct pump operations....6397
RIIPGP202A Handle reagents....6405
RIIPGP203A Operate compressors....6414
RIIPGP204A Carry out bore-field operations....6422
RIIPGP205A Handle, store and use cyanide....6430
RIIPGP301A Conduct drying activities....6440
RIIPGP302A Monitor and operate auxiliary plant and equipment....6450

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RIIPHA201A Operate raw material feed systems 6461
RIIPHA301A Conduct milling/grinding 6468
RIIPHA302A Operate and monitor filter processes 6477
RIIPHA303A Operate agglomeration circuit 6487
RIIPRE201A Conduct solvent extraction 6497
RIIPRE202A Prepare and carry out electrolytic cleaning process 6507
RIIPRE203A Prepare for sintering activities 6515
RIIPRE204A Sinter materials 6522
RIIPRE301A Conduct electrowinning/electrorefining operations 6531
RIIPRE302A Conduct elution processes 6542
RIIPRE303A Conduct gold room operations 6552
RIIPRE304A Monitor casting quality 6563
RIIPRM501A Implement, monitor, rectify and report on contracts 6573
RIIPRO201A Conduct crushing operations 6582
RIIPRO202A Conduct screening and conveying operations 6594
RIIPRO203A Operate programmable logic control systems 6603
RIIPRO204A Bulk package and store product 6611
RIIPRO205A Conduct blending plant operations 6621
RIIPRO301C Conduct crushing and screening plant operations 6630
RIIPRO302A Perform process control room operations 6640
RIIPRO303A Conduct sand wash plant operations 6651
RIIPRO401A Supervise processing operations 6660
RIIPRO402A Supervise recycled materials operations 6667
RIIPRO501A Implement site processing plant operations 6674
RIIPRO502A Develop, implement and maintain process control systems 6684
RIIPRO601A Design processing plant 6696
RIIPSM201A Tap furnaces 6706
RIIPSM202A Prepare for pelletising activities 6716
RIIPSM203A Produce pellets 6725
RIIPSM301A Cast a blast furnace 6733
RIIPSM302A Cast ingots 6741
RIIPSM303A Operate a blast furnace 6751
RIIPSM304A Operate furnaces 6758
RIIPSM305A Operate converters 6766
RIIPSM306A Supply molten metal and additives to furnaces 6775
RIIPSM307A Control molten metal in holding furnace/vessel 6784
RIIPSM308A Monitor and maintain furnace gas efficiency 6794
RIIPSM309A Monitor and maintain flue gas efficiency 6805
RIIQUA201A Maintain and monitor site quality standards 6814
RIIQUA401A Apply a quality management system on site 6821
RIIQUA501A Implement, monitor and develop quality management plans 6829
RIIQUA601A Establish and maintain a quality system 6841
RIIRAI401A Apply and monitor mine services and infrastructure systems 6853
RIIRAI402A Apply and monitor site plant and resource management plan 6864
RIIRAI501B Implement mine transport systems and production equipment 6873
RIIRAI502A Implement site plant and resource management plan 6884
RIIRAI503B Implement site services and infrastructure systems 6893
RIIRAI504A Select and install surface plant and equipment 6905
RIIRAI505A Implement the surface mine mechanical plant management plan 6917
RIIRAI506A Implement, monitor, rectify and report on inventory control system 6928
RIIRAI507A Implement the underground coal mine mechanical plant management plan6937
RIIRAI508A Implement mine services systems 6949
RIIRAI509A Implement mine fixed plant and infrastructure systems 6960

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RIIRAI510A Implement, monitor, rectify and report on interfaces between electrical and mechanical componentry 6972
RIIRAI601A Establish and maintain the site infrastructure and fixed plant systems 6980
RIIRAI602A Establish and maintain mine mechanical plant, services and infrastructure systems 6993
RIIRAI603A Establish and maintain mine transport systems and production equipment7006
RIIRAI604A Establish and maintain mine services and infrastructure systems....7019
RIIRAI605A Establish and maintain an underground mine mechanical plant management system....7033
RIIRAI606A Establish and maintain mine closure management systems 7046
RIIRAI607A Establish quarry operations....7060
RIIRAI608A Establish quarry development....7069
RIIRAI609A Establish and maintain electrical installations, reticulation and protection system....7079
RIIRAI610A Establish and maintain mechanical standard and engineering practices for transport and production equipment....7092
RIIRAI611A Establish and maintain a surface mine mechanical plant management system7104
RIIRAI612A Establish and maintain underground product haulage and transport systems7117
RIIRIS201B Conduct local risk control....7130
RIIRIS301B Apply risk management processes 7138
RIIRIS401A Apply site risk management system....7147
RIIRIS402A Carry out the risk management processes 7159
RIIRIS501A Implement and maintain management system to control risk 7171
RIIRIS601A Establish and maintain the risk management system 7183
RIISAM201A Handle resources and infrastructure materials and safely dispose of non toxic materials 7196
RIISAM202A Isolate and access plant....7206
RIISAM203B Use hand and power tools 7215
RIISAM204B Operate small plant and equipment....7224
RIISAM205A Cut, weld and bend materials....7235
RIISAM207A Apply operational maintenance skills....7245
RIISAM208A Perform plant operational maintenance 7255
RIISAM209A Carry out operational maintenance....7262
RIISAM210A Remove and fit wheel assemblies 7273
RIISAM211B Remove, repair and refit tyres and tubes 7283
RIISAM212A Service mine plant and equipment....7294
RIISAM213A Position and set up mobile lighting 7302
RIISAM214A Provide support to electrical tradesperson 7310
RIISAM215A Carry out drilling industry operational maintenance....7317
RIISAM301A Test operational functions of vehicles and equipment 7326
RIISAM302A Service and handover plant and machines....7333
RIISAM303A Shut down dredge for operator maintenance 7344
RIISAM304A Install, commission and maintain major conveyor equipment and systems7352
RIISAM305A Repair and splice conveyor belting....7361
RIISAM306A Service and maintain conveyors, feeders and hoppers 7368
RIISAM307A Service and maintain crushers 7379
RIISAM308A Service and maintain screens 7389
RIISAM309A Service and maintain pumps 7399
RIISAM310A Install and commission plant, machinery and services 7409
RIISAM311A Maintain winder equipment....7420
RIISAM312A Inspect and maintain shafts and structures 7429
RIISAM313A Monitor, inspect and service ropes and attachments 7437
RIISAM314A Manage oil and gas drilling equipment maintenance....7447

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RIISAM401A Apply site plant, equipment and infrastructure maintenance management plan 7455
RIISAM402A Supervise operation of electrical equipment and installations 7464
RIISAM403A Commission/recommission plant 7475
RIISAM501A Implement and maintain the site plant, equipment and infrastructure maintenance plan 7483
RIISAM502B Manage general drilling equipment maintenance 7493
RIISAM601A Establish and maintain plant, equipment and infrastructure maintenance system 7502
RIISAM602A Establish and maintain maintenance management system for mechanical plant and equipment 7514
RIISDM501A Conduct mine surveying operations 7524
RIISRM301B Blend stockpile materials 7538
RIISRM302B Conduct stockpile reclaiming operations 7547
RIISRM303B Move and position materials to form stockpiles 7555
RIISRM304B Maintain stockpiles 7563
RIISRM401A Apply and monitor the site stockpile management plan 7571
RIISRM501A Implement the stockpile management plan 7579
RIISRM502A Design stockpile formations and reclaiming systems 7589
RIISRM601A Establish and maintain the stockpile management system 7598
RIISTD201A Read and interpret maps 7610
RIISTD202A Collect routine site samples 7617
RIISTD301A Take environmental samples and measurements 7628
RIISTD302A Process data and maintain accurate records 7636
RIIUMM201A Install ground support 7643
RIIUMM202A Install and maintain vent 7650
RIIUMM203A Prepare and perform manual scaling operations 7659
RIIUMM301A Conduct wet filling activities 7667
RIIUMM302A Install sets 7674
RIIUMM303A Conduct hand held mining 7681
RIIUMM304A Construct and maintain underground roads 7690
RIIUMM305A Install and remove a secondary fan 7700
RIIUMM306A Conduct mechanical scaling 7708
RIIUMM307A Maintain underground stockpiles 7716
RIIUND201A Install, maintain and recover reticulation systems 7726
RIIUND202A Operate from elevated work platform underground 7735
RIIUND204A Refuel vehicles/machines underground 7746
RIIUND205A Respond to a workforce incident 7754
RIIUND206A Install hand held underground ground support 7762
RIIUND207A Conduct underground lifting operations 7770
RIIUND208A Conduct skip operations 7777
RIIUND209A Operate automated winder 7788
RIIUND301A Operate manual winder 7800
RIIUND302A Conduct cage operations 7810
RIIUND303A Operate winder for shaft sinking 7819
RIIUND304A Recover equipment 7829
RIIUND305A Recover underground equipment 7838
RIIUND306A Conduct line of sight remote operations 7846
RIIUND307A Conduct tele-remote operations 7856
RIIUND308A Conduct control room operations 7865
RIIUND309A Conduct mechanical underground ground support drilling and installation 7872
RIIUND310 Apply shot-crete underground 7881
RIIUND401B Apply and monitor the ventilation management plan 7888

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RIIUND501A Implement the ventilation management plan....7899
RIIUND601A Establish and maintain the ventilation management system....7911
RIIUND602A Establish and maintain mine services systems....7925
RIIUND603A Manage, operate and maintain the mine ventilation system....7938
RIIVEH201B Operate light vehicle....7960
RIIVEH202A Operate a medium vehicle....7970
RIIVEH203B Operate light vehicle underground....7981
RIIVEH301A Conduct rail haulage operations....7991
RIIVEH302A Operate multi-combination vehicle....8002
RIIVEH303A Drive heavy combination vehicle....8014
RIIVEH304B Conduct tip truck operations....8023
RIIVEH305A Operate and maintain a four wheel drive vehicle....8033
RIIVEH306A Operate mine service vehicle....8044
RIIVEH307A Operate heavy rigid vehicle....8054
RIIWBP201A Treat and dispose of rejects and tailings....8064
RIIWBP202A Distribute tailings....8074
RIIWBP203B Monitor tailings dam environment....8085
RIIWBP401A Apply and monitor site waste and by-products management plan....8092
RIIWBP501A Implement site waste and by-product management plan....8100
RIIWBP502A Plan and monitor recycled material operations....8111
RIIWBP601A Establish and maintain waste and by-product management system....8122
RIIWMG201A Conduct dewatering activities in surface operations....8135
RIIWMG202A Conduct dewatering operations in underground mining operations....8144
RIIWMG203A Drain and dewater civil construction site....8154
RIIWMG301A Control construction site water table....8163
RIIWMG302A Reclaim and treat water....8172
RIIWMG401A Apply and monitor the site water management plan....8179
RIIWMG402A Monitor and coordinate waste and process water treatment....8187
RIIWMG501A Implement the site water management plan....8195
RIIWMG601A Establish and maintain water management system....8205
AHCNAR201A Carry out natural area restoration works....8219
AHCNAR303A Implement revegetation works....8226
AHCSAW201A Conduct erosion and sediment control activities....8233
AHCSAW301A Construct conservation earthworks....8239
BSBCMN311B Maintain workplace safety....8245
BSBCUS301B Deliver and monitor a service to customers....8254
BSBCUS401B Coordinate implementation of customer service strategies....8262
BSBCUS501A Manage quality customer service....8270
BSBFIA402A Report on financial activity....8278
BSBFIM501A Manage budgets and financial plans....8287
BSBFLM303C Contribute to effective workplace relationships....8296
BSBFLM305C Support operational plan....8304
BSBFLM312B Contribute to team effectiveness....8313
BSBHRM501A Manage human resources services....8322
BSBHRM506A Manage recruitment selection and induction processes....8330
BSBINM401A IMPLEMENT WORKPLACE INFORMATION SYSTEM....8338
BSBINM501A Manage an information or knowledge management system....8345
BSBINM601A Manage knowledge and information....8354
BSBINN301A Promote innovation in a team environment....8363
BSBINN502A Build and sustain an innovative work environment....8372
BSBITU101A Operate a personal computer....8381
BSBLED401A Develop teams and individuals....8388
BSBLED501A Develop a workplace learning environment....8396

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BSBMGT401A Show leadership in the workplace 8405
BSBMGT402A Implement operational plan 8411
BSBMGT403A Implement continuous improvement 8419
BSBMGT502B Manage people performance 8426
BSBMGT515A Manage operational plan 8433
BSBMGT516A Facilitate continuous improvement 8441
BSBMGT605B Provide leadership across the organisation 8449
BSBMGT608B Manage innovation and continuous improvement 8458
BSBMGT616A Develop and implement strategic plans 8466
BSBMGT617A Develop and implement a business plan 8473
BSBOHS402B Contribute to the implementation of the OHS consultation process 8480
BSBOHS407A Monitor a safe workplace 8490
BSBOHS509A Ensure a safe workplace 8499
BSBOHS607B Advise on application of safe design principles to control OHS risk 8507
BSBPMG405A Apply human resources management approaches 8519
BSBPMG408A Apply contract and procurement procedures 8526
BSBPMG501A Manage application of project integrative processes 8535
BSBPMG502A Manage project scope 8543
BSBPMG503A Manage project time 8550
BSBPMG504A Manage project costs 8557
BSBPMG505A Manage project quality 8565
BSBPMG506A Manage project human resources 8573
BSBPMG507A Manage project communications 8580
BSBPMG508A Manage project risk 8589
BSBPMG509A Manage project procurement 8596
BSBPMG510A Manage projects 8605
BSBPMG601A Direct the integration of projects 8614
BSBPMG602A Direct the scope of a project program 8622
BSBPMG603A Direct time management of a project program 8630
BSBPMG604A Direct cost management of a project program 8638
BSBPMG605A Direct quality management of a project program 8646
BSBPMG606A Direct human resources management of a project program 8653
BSBPMG607A Direct communications management of a project program 8661
BSBPMG608A Direct risk management of a project program 8669
BSBPMG609A Direct procurement and contracting for a project program 8676
BSBPUR301B Purchase goods and services 8684
BSBRKG304B Maintain business records 8690
BSBRKG403C Set up a business or records system for a small business 8699
BSBSMB402A Plan small business finances 8707
BSBSMB403A Market the small business 8715
BSBSMB404A Undertake small business planning 8723
BSBSMB405B Monitor and manage small business operations 8734
BSBSUS201A Participate in environmentally sustainable work practices 8741
BSBSUS301A Implement and monitor environmentally sustainable work practices 8749
BSBWOR203B Work effectively with others 8763
BSBWOR401A Establish effective workplace relationships 8769
BSBWOR404B Develop work priorities 8778
BSBWOR501B Manage personal work priorities and professional development 8786
BSBWOR502B Ensure team effectiveness 8793
BSBWRK509A Manage industrial relations 8801
CPCCCM2007B Use explosive power tools 8809
CPCCLDG3001A Licence to perform dogging 8820
CPCCLRG3001A Licence to perform rigging basic level 8831

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CPCCLSF2001A Licence to erect, alter and dismantle scaffolding basic level.....8845
CPCCSF2004A Place and fix reinforcement materials.....8858
CPPSIS3015A Collect spatial data.....8869
CPPSIS3016A Provide field support services.....8878
CPPSIS5032A Capture new spatial data.....8885
CPPSIS5035A Obtain and validate spatial data.....8896
CPPSIS5036A Integrate spatial datasets.....8906
FPICOT2239A Trim and cut felled trees.....8916
FPIFGM3212 Fall trees manually (intermediate).....8928
FPPSTM210A Monitor and control boiler operation.....8941
FPPSTM320A Manage steam boiler startup.....8953
FPPSTM330A Shut down and bank steam boiler.....8963
FPPSTM440A Troubleshoot and rectify boiler plant systems.....8975
HLTFA301C Apply first aid.....8985
HLTFA402C Apply advanced first aid.....8998
ICAICT308A Use advanced features of computer applications.....9012
LGACOM401A Administer contracts.....9019
LGACOM402A Arrange contracts.....9028
LGACOM409A Prepare tender documentation.....9035
LGACOM410A Prepare response to tenders.....9044
LGADMIN417A Conduct community consultations.....9051
LGAWORK401A Develop works maintenance schedule.....9059
LGAWORK402A Prepare for operational works.....9065
LGAWORK403A Manage civil plant and resources.....9073
LGAWORK501A Prepare preliminary design for operational works.....9080
LGAWORK502A Prepare detailed works project documentation.....9087
LGAWORK503A Undertake project investigation.....9094
MEM09011B Apply basic engineering design concepts.....9101
MEM30001A Use computer aided drafting systems to produce basic engineering drawings9108
MEM30002A Produce basic engineering graphics.....9115
MEM30003A Produce detailed engineering drawings.....9122
MEM30004A Use CAD to create and display 3D models.....9129
MSAPMPER200C Work in accordance with an issued permit.....9136
MSAPMPER300C Issue work permits.....9149
MSAPMSUP101A Clean workplace or equipment.....9162
MSL913002A Plan and conduct laboratory/field work.....9168
MSL916003A Supervise laboratory operations in work/functional area.....9180
MSL924001A Process and interpret data.....9194
MSL925001A Analyse data and report results.....9205
MSL943001A Work safely with instruments that emit ionising radiation.....9219
MSL973001A Perform basic tests.....9228
MSL973002A Prepare working solutions.....9240
MSL973006A Prepare trial batches for evaluation.....9251
MSL974001A Prepare, standardise and use solutions.....9262
MSL974003A Perform chemical tests and procedures.....9274
MSL974005A Perform physical tests.....9289
MSL974010A Perform mechanical tests.....9303
MSL975007A Supervise sampling, inspections and testing at construction sites.....9316
MSL975016A Perform complex tests to measure engineering properties of materials...9329
MSL953001A Receive and prepare samples for testing.....9342
MSAPMSUP172A Identify and minimise environmental hazards.....9355
NWP331B Inspect conduit and report on condition and features.....9361
NWP440A Supervise conduit inspection and reporting.....9372

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PMAOHS211B Prepare equipment for emergency response 9380
PMAOMIR444B Develop incident containment tactics 9387
PMAOPS202B Operate fluid mixing equipment 9396
PMAOPS205B Operate heat exchangers 9405
PMAOPS206B Operate separation equipment 9413
PMAOPS207B Operate powered separation equipment 9420
PMAOPS208B Operate chemical separation equipment 9429
PMAOPS223B Operate and monitor valve systems 9437
PMAOPS230B Monitor, operate and maintain pipeline stations and equipment 9446
PMAOPS307B Transfer bulk fluids into/out of storage facility 9455
PMAOPS330B Communicate and monitor pipeline activities 9466
PMAOPS335A Conduct pipeline pigging 9476
PMAOPS411B Manage plant shutdown and restart 9484
PMASUP236B Operate vehicles in the field 9493
PMASUP441C Decommission plant 9502
PMLTEST300B Perform basic tests 9510
PMLTEST307B Prepare trial batches for evaluation 9518
PMLTEST403B Assist with geotechnical site investigations 9526
PUAAMS007B Coordinate search and rescue operations 9534
PUAFIR201B Prevent injury 9544
PUAFIR207B Operate breathing apparatus open circuit 9553
PUAFIR320 Render hazardous materials incidents safe 9560
PUAFIR307B Monitor hazardous atmospheres 9569
PUAFIR308B Employ personal protection at a hazardous materials incident 9575
PUAFIR316 Identify, detect and monitor hazardous materials at an incident 9582
PUASAR022A Participate in a rescue operation 9591
PUASAR024A Undertake road crash rescue 9600
PUASAR025A Undertake confined space rescue 9611
PUASAR027A Undertake land search rescue 9620
PUASAR032A Undertake vertical rescue 9630
PUATEA001B Work in a team 9639
SUGPOTB2A Operate a turbine 9645
TAEASS301B Contribute to assessment 9651
TAEASS402B Assess competence 9659
TAEASS403B Participate in assessment validation 9668
TAEDEL301A Provide work skill instruction 9674
TAAASS401C Plan and organise assessment 9684
TAEASS401A Plan assessment activities and processes 9706
TLIA2009A Complete and check import/export documentation 9716
TLIA3002A Maintain container/cargo records 9725
TLIC3004A Drive heavy rigid vehicle 9733
TLID2022A Conduct weighbridge operations 9741
TLID3011A Conduct specialised forklift operations 9750
UEGNSG202B Construct and lay distribution pipelines and services 9759
UEPOPS242B Operate and monitor dust collection plant 9788
UEPOPS316B Operate and monitor boiler steam/water cycle 9800
BSBWOR502A Ensure team effectiveness 9812
BSBWOR501A Manage personal work priorities and professional development 9819
BSBSMB405A Monitor and manage small business operations 9825
BSBRKG403B Set up a business or records system for a small business 9833
CPPSIS5006A Integrate spatial datasets 9843
CPPSIS5005A Obtain and validate existing spatial data 9854
CPPSIS5002A Capture new spatial data 9865

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CPPSIS3005A Collect basic spatial data....9877
BSBCUS401A Coordinate implementation of customer service strategies....9886
UEGNSG202A Construct and lay distribution pipelines....9896
TLID1107C Conduct specialised forklift operations....9913
BSBCUS301A Deliver and monitor a service to customers....9923
PUAFIR306B Render hazardous materials incidents safe....9931
UEPOPS316A Operate and Monitor Boiler Steam/Water Cycle....9940
PMLORG301A Plan and conduct laboratory/field work....9953
PMLOHS301B Work safely with instruments that emit ionising radiation....9961
MSAPMPER200B Work in accordance with an issued permit....9968
FPIFGM3204A Fall trees manually (intermediate)....9979
FPICOT2221B Trim and cross cut felled trees....9990
CPCCCM2007A Use explosive power tools....9992
HLTFA402B Apply advanced first aid....10004
CPPSIS3006A Provide field support services....10018
BSBWOR203A Work effectively with others....10026
ICAU3126B Use advanced features of computer applications....10033
HLTFA301B Apply first aid....10040

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Modification History

The version details of this endorsed Training Package are in the table below. The latest information is at the top of the table.

Version	Release date	Comments
3.2	25 May 2013	Technical issue with imported units not transferred into each qualification in version 3.1 where corrected. ISC updates – no code changes RII40412 Certificate IV in Underground Coal Operations. Missing elective RIIMCU501A Implement the spontaneous combustion management plan RII40212 Certificate IV in Surface Coal Mining (Open Cut Examiner). Flexibility Policy correction with 1 too many imports identified making achieving packaging rule unattainable Imported Units Update of High Risk Work Licence units Update of PUAFIR and PUASAR units Removal of orphan units not identified as elective, prerequisite or corequisite in the Training Package
3.1	15 February 2013	**ISC updates – no code changes** RIINHB211A Assist mud rotary drilling **Imported Units** 30 units replaced with current equivalent units of competency UEGNSG202A Construct and lay distribution pipelines to UEGNSG202B Construct and lay distribution pipelines FPPSTM4A Troubleshoot and rectify boiler plant systems to FPPSTM440A Troubleshoot and rectify boiler plant systems UEPOPS316A Operate and monitor boiler steam/water to UEPOPS316B Operate and monitor boiler steam/water MSAPMPER200B Work in accordance with an issued permit to MSAPMPER200C Work in accordance with an issued permit PMLOHS301B Work safely with instruments that emit ionising radiation to MSL943001A Work safely with instruments that emit ionizing radiation. BSBWOR203A Work effectively with others to BSBWOR203B Work effectively with others BSBWOR502A Ensure team effectiveness to BSBWOR502B Ensure

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		team effectiveness BSBSMB405A Monitor and manage small business operations to BSBSMB405B Monitor and manage small business operations BSBWOR501A Manage personal work priorities and professional development to BSBWOR501B Manage professional work priorities and professional development PMLORG301A Plan and conduct laboratory/field work to MSL913002A Plan and conduct laboratory/field work BSBRKG403B Set up a business or records system for a small business to BSBRKG403C Set up a business or records system for a small business FPICOT2221B Trim and cut felled trees to FPICOT2239A Trim and cut felled trees ICAU3126B Use advanced features of computer applications to ICAICT308A Use advanced features of computer applications BSBCUS301A Deliver and monitor a service to customers to BSBCUS301B Deliver and monitor a service to customers BSBCUS401A Coordinate implementation of customer service strategies to BSBCUS401B Coordinate implementation of customer service strategies TAAASS401C Plan and organise assessment to TAEASS401A Plan and organise assessment TLID1107C Conduct specialised forklift operations to TLID3011A Conduct specialised forklift operations HLTFA301B Apply first aid to HLTFA301C Apply first aid HLTFA402B Apply advanced first aid to HLTFA402C Apply advanced first aid FPIFGM3204A Fall trees manually (intermediate) to FPIFGM3212 Fall trees manually (intermediate) FPICOT2221B Trim and cross cut felled trees to FPICOT2239A Trim and cut felled trees FPPSTM2A Monitor and control boiler operations to FPPSTM210A Monitor and control boiler operation FPPSTM4A Troubleshoot ad rectify boiler plant systems to FPPSTM440A Troubleshoot and rectify boiler plant systems UEPOPS242A Operate and monitor dust collection plant to UEPOPS242B Operate and monitor dust collection plant MSAPMPER300B Issue work permits to MSAPMPER300C Issue work permits UEPOPS316A Operate and monitor boiler steam/water cycle to

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		UEPOPS316B Operate and monitor boiler steam/water cycle PUAFIR307A Monitor hazardous atmospheres to PUAFIR307B Monitor hazardous atmospheres PMLTEST403A Assist with geotechnical site investigations to PMLTEST403B Assist with geotechnical site investigations **Imported Units that are prerequisites to existing units** PUAFIR201B Prevent injury PUASAR022A Participate in a rescue operation PUASAR022A Participate in a rescue operation PUASAR022A Participate in a rescue operation PUAFIR308B Employ Personal Protection at a Hazardous Materials Incident
3.0	TBA	**Units of competency** *New* RIIBHD305 Conduct down-hole hammer drilling RIICRC311 Conduct concrete road paver operations RIICRC312 Setup and maintain concrete paver stringlines RIICRC313 Conduct concrete road curing and texturing operations RIICRC314 Handle concrete materials RIICRC315 Use concreting materials and equipment RIICRC316 Place and compact concrete RIICRC317 Finish concrete pavements RIICRC318 Cure concrete RIICRC319 Saw and cut concrete pavements to initiate planned cracks RIICRC320 Seal concrete pavements RIICRC321 Use automated paving guidance systems RIICRC322 Receive, check and record concrete deliveries RIICRC323 Insert tie bars in fresh concrete RIIDES301 Inspect, test and maintain diesel engine systems and their ancillary systems RIIDES302 Inspect, test and maintain joints on diesel engine systems RIIDES303 Inspect, test and maintain cooling systems on diesel engine systems RIIDES304 Inspect, test and maintain inlet systems on diesel engine systems

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		RIIDES305 Inspect, test and maintain exhaust systems on diesel engine systems RIIDES306 Inspect, test and maintain safety shutdown systems on diesel engine systems RIIDES307 Test, determine the cause and rectify excessive emission levels on diesel engine systems RIIMPO333 Conduct underground load, haul and dump truck operations RIIPEO302 Operate and monitor ore car dumpers RIIUND310 Apply shot-crete underground ***ISC Updates with code changes*** RIIBHD304A to RIIBHD304B Set up and prepare for open cut drilling operations RIIBLA203A to RIIBLA203B Conduct mobile mixing of explosives RIICBS401A to RIICBS401B Apply the principles of asphalt paving and compaction RIICBS402A to RIICBS402B Apply the principles for the application of bituminous sprayed treatment RIICBS403A to RIICBS403B Apply the principles for the polymer modified binder RIICBS404A to RIICBS404B Apply principles for the selection and use of bituminous emulsion RIICRC406A to RIICRC406B Apply the principles of pavement maintenance RIICWD524A to RIICWD524B Prepare design of sprayed seal surfacing RIICWD525A to RIICWD525B Select pavement surfacing RIICWM401A to RIICWM401B Supervise civil works RIIEGS305A to RIIEGS305B Navigate in remote or trackless area RIIERR203A to RIIERR203B Escape from hazardous situation unaided RIIMPO205A to RIIMPO205B Operate roller / compactor RIIMPO206A to RIIMPO206B Conduct bulk water truck operations RIIMPO301B to RIIMPO301C Conduct hydraulic excavator operations RIIMPO307A to RIIMPO307B Conduct wheeled grader operations in underground mines RIIMPO310A to RIIMPO310B Conduct grader operations

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		RIINHB210A to RIINHB210B Assist surface directional drilling RIINHB324A to RIINHB324B Carry out grouting or cementing operations RIIPRO301B to RIIPRO301C Conduct crushing and screening operations RIIRIS301A to RIIRIS301B Apply risk management processes RIISAM203A to RIISAM203B Use hand and power tools RIISAM204A to RIISAM204B Operate small plant and equipment RIIVEH203A to RIIVEH203B Operate light vehicle underground RIIVEH304A to RIIVEH304B Conduct tip truck operations RIIWBP203A to RIIWBP203B Monitor tailings dam environment ***ISC Updates – no code changes*** RIIHAN201A Operate a forklift RIIHAN208A Perform dogging RIIHAN209A Perform basic rigging RIIHAN210A Perform intermediate rigging operations RIIHAN211A Conduct basic scaffolding operations RIIHAN212A Conduct non-slewing crane operations RIIHAN213A Work effectively in the drilling industry RIIHAN301B Operate elevating work platform RIIHAN302A Conduct intermediate scaffolding RIIHAN304A Conduct slewing crane operations RIIHAN305A Operate a gantry or overhead crane RIIHAN307A Operate a vehicle loading crane ***Removed*** RIISAM206A Operate equipment services vehicle underground ***Imported units*** 33 superseded units replaced with current equivalent unit of competency BSBWOR404A Develop work priorities replaced with BSBWOR404B Develop work priorities FPICOT2221A Trim and cross cut felled trees replaced with FPICOT2221B Trim and cross cut felled trees FPPSTM1A Manage steam boiler start-up replaced with FPPSTM320A Manage steam boiler startup

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		FPPSTM3A Shut down and store steam boiler replaced with FPPSTM330A Shut down and bank steam boiler MSAPMPER300B Issue work permits replaced with MSAPMPER300C Issue work permits PUASAR002B Undertake road accident rescue replaced with PUASAR024A Undertake road crash rescue PUASAR004B Undertake vertical rescue replaced with PUASAR032A Undertake vertical rescue PUASAR005B Undertake confined space rescue replaced with PUASAR025A Undertake confined space rescue PUASAR008B Search as a member of a land search team replaced with PUASAR027A Undertake land search rescue PMLDATA400A Process and interpret data replaced with MSL924001A Process and interpret data PMLDATA500B Analyse data and report results replaced with MSL925001A Analyse data and report results PMLORG600B Supervise laboratory operations in work/functional area replaced with MSL916003A Supervise laboratory operations in work/functional area PMLTEST303B Prepare working solutions replaced with MSL973002A Prepare working solutions PMLTEST402B Prepare standardise and use solutions replaced with MSL974001A Prepare standardise and use solutions PMLTEST404A Perform chemical tests and procedures replaced with MSL974003A Perform chemical tests and procedures PMLTEST406A Perform physical tests replaced with MSL974005A Perform physical tests PMLTEST411A Perform mechanical tests replaced with MSL974010A Perform mechanical tests PMLSAMP302A Receive and prepare samples for testing replaced with MSL953001A Receive and prepare samples for testing PMLTEST300B Perform basic tests replaced with MSL953001A Receive and prepare samples for testing PMLTEST307B Prepare trial batches for evaluation replaced with MSL973006A Prepare trial batches for evaluation PMLTEST511B Supervise earthworks inspection, sampling and testing operations replaced with MSL975007A Supervise sampling, inspections and testing at construction sites PMLTEST520A Perform complex tests to measure engineering properties of materials replaced with MSL975016A Perform complex

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		tests to measure engineering properties of materials RTD2022A Carry out natural area restoration works replaced with AHCNAR201A Carry out natural area restoration works RTD2202A Conduct erosion and sediment control activities replaced with AHCSAW201A Conduct erosion and sediment control activities RTD3034A Implement revegetation works replaced with AHCNAR303A Implement revegetation works RTD3205A Construct conservation earthworks replaced with AHCSAW301A Construct conservation earthworks TAAASS301B Contribute to assessment replaced with TAEASS301B Contribute to assessment TAAASS402C Assess competence replaced with TAEASS402B Assess competence TAAASS404B Participate in assessment validation replaced with TAEASS403B Participate in assessment validation TAADEL301C Provide training through instruction and demonstration of work skills replaced with TAEDEL301A Provide work skill instruction TLIA907E Complete and check import/export documentation replaced with TLIA2009A Complete and check import/export documentation TLIC407D Drive heavy rigid vehicle replaced with TLIC3004A Drive heavy rigid vehicle TLID2207C Conduct weighbridge operations replaced with TLID2022A Conduct weighbridge operations **Qualifications** ***Endorsement required changes*** RII20712 Certificate II in Civil Construction RII30112 Certificate III in Surface Extraction Operations RII30212 Certificate III in Underground Coal Operations RII30912 Certificate III in Civil Construction RII40212 Certificate IV in Surface Coal Mining (Open Cut Examiner) RII40412 Certificate IV in Coal Underground Operations RII40712 Certificate IV in Civil Construction Supervision RII50912 Diploma of Underground Coal Mining Management RII60312 Advanced Diploma of Underground Coal Mining Management ***Qualifications removed*** • RII31009 Certificate III in Bituminous Surfacing

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		• RII31109 Certificate III in Bridge Construction and Maintenance • RII31309 Certificate III in Pipe Laying • RII31409 Certificate III in Road Construction and Maintenance • RII31509 Certificate III in Road Marking • RII31709 Certificate III in Tunnel Construction • RII32109 Certificate III in Timber Bridge Construction and Maintenance **ISC Updates** All qualifications – Title for Mandatory Units changed to Core Units, Elective titles changed from Specialist Electives and General Electives to Group (#) Electives in accordance with Flexibility in Packaging Rules requirements. Non-regulated occupations: Amendment to packaging rules to allow for units of competency from accredited courses to be imported • RII10109 Certificate I in Resources and Infrastructure Operations • RII20109 Certificate II in Resources and Infrastructure Work Preparation • RII20609 Certificate II in Mining Field/Exploration Operations • RII20712 Certificate II in Civil Construction • RII20809 Certificate II in Bituminous Surfacing • RII30912 Certificate III in Civil Construction • RII31609 Certificate III in Trenchless Technology • RII40609 Certificate IV in Civil Construction Operations • RII40712 Certificate IV in Civil Construction Supervision • RII40809 Certificate IV in Civil Construction Design • RII50309 Diploma of Minerals Processing • RII50409 Diploma of Civil Construction Management • RII50509 Diploma of Civil Construction Design • RII60509 Advanced Diploma of Civil Construction Design • RII60609 Advanced Diploma of Civil Construction **Other qualification ISC updates** RII10109 Certificate I in Resources and Infrastructure Operations RII30311 Certificate III in Underground Metalliferous Mining RII30411 Certificate III in Resource Processing RII31609 Certificate III in Trenchless Technology RII31809 Certificate III in Drilling Operations RII40311 Certificate IV in Metalliferous Mining Operations

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		(Underground) RII40909 Certificate IV in Drilling Operations RII50409 Diploma of Civil Construction Management **New skills sets** Skill Set Explosion Protected Diesel Engine Systems Maintenance Skill Set Work Zone Traffic Control – Road Labourer Skill Set Work Zone Traffic Control – Traffic Controller Skill Set Work Zone Traffic Control – Implement Traffic Control Guidance Plan Skill Set Work Zone Traffic Control – Supervisor Skill Set Work Zone Traffic Control Guidance Plan – Developer Skill Set Work Zone Traffic Control – Auditor / Inspector Skill Set Surface Coal Mine Safety Skill Set Underground Coal Mine Safety
2.0	29/06/11	RIIHAN303A Conduct integrated tool carrier operations replaced with new unit RIIHAN311A Conduct operations with integrated tool carrier RIIMCP201A Monitor coal preparation plant operations replaced with new RIIMCP301A Monitor operations in coal preparation plant RIINHB204A Assist air drilling replaced with new unit RIINHB219A Assist with air drilling RIINHB321A Construct single aquifer production bores replaced with new unit RIINHB325A Construct and complete single aquifer bores RIIPBP201A Control acid plant operations replaced with new unit RIIPBP302A Control operations in acid plant RIIWMG204A Reclaim and treat water system replaced with new unit RIIWMG302A Reclaim and treat water RII30109 Certificate III in Surface Extraction Operations replaced with RII30111 Certificate III in Surface Extraction Operations RII30309 Certificate III in Underground Metalliferous Mining replaced with RII30311 Certificate III in Underground Metalliferous Mining RII30409 Certificate III in Resource Processing replaced with RII30411 Certificate III in Resource Processing RII30609 Certificate III in Small Mining Operations replaced with RII30609 Certificate III in Small Mining Operations RII40309 Certificate IV in Metalliferous Mining Operations (Underground) replaced with RII40311 Certificate IV in Metalliferous

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		Mining Operations RII40409 Certificate IV in Underground Coal Operations replaced with RII40411 Certificate IV in Underground Coal Operations **New Skill Set** Skill Set Supervision of Indigenous Employees **Other New Units of Competency** RIICOM302A Communicate workplace information RIIENV302A Apply environmentally sustainable work practices RIIFIA401A Manage financial records RIILAT401A Provide leadership in the supervision of Indigenous employees RIIMPO331A Conduct operations with stockpile dozer RIIMPO332A Conduct operations with skid steer loader RIIVEH307A Operate heavy rigid vehicle Additional imported units: NWP331B Inspect conduit and report on condition and features (for operators) NWP440A Supervise conduit inspection and reporting (for supervisors and managers) **ISC Upgrades – Updated Units of Competency – codes changed to Version B** RIIBEF201B Plan and organise work RIIBLA202B Support underground shotfiring operations RIICOM301B Communicate information RIIEGS202B Conduct field work RIIERR401B Apply and monitor surface operations emergency preparedness and response procedures RIIGOV401B Apply, monitor and report on compliance systems RIIHAN301B Operate elevating work platform RIIMEX203B Break oversize rock RIIMEX302B Assess ground conditions RIIMEX404B Apply and monitor systems for stable mining RIIMPO301B Conduct hydraulic excavator operations RIIMPO302B Conduct hydraulic shovel operations RIIMPO304B Conduct wheel loader operations

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		RIIMPO305B Conduct coal stockpile dozer operations RIIMPO308B Conduct tracked dozer operations RIIMPO318B Conduct civil construction skid steer loader operations RIIMPO313B Conduct face loader operations RIIMPO321B Conduct civil construction wheeled front end loader operations RIINHB201B Load, secure and unload drilling equipment and materials RIINHB208B Assist diamond core drilling RIINHB304B Conduct air drilling RIINHB307B Conduct conventional core drilling RIINHB412B Construct geothermal wells RIIPBE205B Conduct roasting operations RIIPBE303B Conduct filtering process RIIPBE304B Conduct heavy media separation RIIPBE308B Conduct thickening and clarifying process RIIPBE309B Conduct wet gravity separation RIIPBE310B Conduct flotation process RIIPBE311B Conduct magnetic separation RIIPEO201B Conduct conveyor operations RIIPEO203B Conduct stacker operations RIIPRO301B Conduct crushing and screening plant operations RIIRAI501BImplement mine transport and production equipment RIIRAI503B Implement site services and infrastructure systems RIIRIS201B Conduct local risk control RIISAM211B Remove, repair and refit tyres and tubes RIISAM502B Manage general drilling equipment maintenance RIISRM301B Blend stockpile materials RIISRM302B Conduct stockpile reclaiming operations RIISRM303B Move and position materials to form stockpiles RIISRM304B Maintain stockpiles RIIUND401B Apply and monitor the ventilation management plan RIIVEH201B Operate light vehicle

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1	7 July 2009	Primary Release

Modification Table

The table below provides details of changes to units of competency and qualifications to assist stakeholders in the transition from RII09 Resources and Infrastructure Operations Version 2.0 to RII09 Resources and Infrastructure Operations Version 3.0.

New Version Number	Affected Qualifications	Affected Units of Competency	Version Modification History
3.0	Skill Set Leading Hand RII40109 Certificate IV in Surface Extraction Operations RII40212 Certificate IV in Surface Coal Mining Open Cut Examiner RII40311 Certificate IV in Metalliferous Mining Operations Underground RII40412 Certificate IV in Underground Coal Operations RII40509 Certificate IV in Resource Processing RII40712 Certificate IV in Civil Construction Supervision RII40809 Certificate IV in Civil Construction Design	BSBWOR404A Develop work priorities	Unit superseded - replaced by equivalent unit: BSBWOR404B Develop work priorities
	RII20712 Certificate II in Civil Construction	FPICOT2221A Trim and cross cut felled trees	Unit superseded - replaced by equivalent unit: FPICOT2221B Trim and cross

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	RII30912 Certificate III in Civil Construction RII31409 Certificate III in Road Construction and Maintenance RII32109 Certificate III in Timber Bridge Construction and Maintenance		cut felled trees
	RII30411 Certificate III in Resource Processing	FPPSTM1A Manage steam boiler start-up	Unit superseded - replaced by equivalent unit: FPPSTM320A Manage steam boiler startup
	RII30411 Certificate III in Resource Processing	FPPSTM3A Shut down and store steam boiler	Unit superseded - replaced by equivalent unit: FPPSTM330A Shut down and bank steam boiler
	RII30112 Certificate III in Surface Extraction Operations RII30311 Certificate III in Underground Metalliferous Mining RII30411 Certificate III in Resource Processing RII32009 Certificate III in Drilling Oil Gas On shore RII41109 Certificate IV in Drilling Oil Gas On shore	MSAPMPER300B Issue work permits	Unit superseded - replaced by equivalent unit: MSAPMPER300C Issue work permits
	RII30709 Certificate III in Mine Emergency Response and	PUASAR002B Undertake road accident rescue	Unit superseded - replaced by equivalent unit: PUASAR024A Undertake road crash rescue

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	Rescue		
	RII30709 Certificate III in Mine Emergency Response and Rescue	PUASAR004B Undertake vertical rescue	Unit superseded - replaced by equivalent unit: PUASAR032A Undertake vertical rescue
	RII30709 Certificate III in Mine Emergency Response and Rescue	PUASAR005B Undertake confined space rescue	Unit superseded - replaced by equivalent unit: PUASAR025A Undertake confined space rescue
	RII30709 Certificate III in Mine Emergency Response and Rescue	PUASAR008B Search as a member of a land search team	Unit superseded - replaced by equivalent unit: PUASAR027A Undertake land search rescue
	RII30112 Certificate III in Surface Extraction Operations RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision RII40809 Certificate IV in Civil Construction Design	PMLDATA400A Process and interpret data	Unit superseded - replaced by equivalent unit: MSL924001A Process and interpret data
	RII40509 Certificate IV in Resource Processing RII50409 Diploma of Civil Construction Management RII50509 Diploma of Civil	PMLDATA500B Analyse data and report results	Unit superseded - replaced by equivalent unit: MSL925001A Analyse data and report results

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	Construction Design		
		PMLORG600B Supervise laboratory operations in work/functional area	Unit superseded - replaced by equivalent unit: MSL916003A Supervise laboratory operations in work/functional area
	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision	PMLTEST303B Prepare working solutions	Unit superseded - replaced by equivalent unit: MSL973002A Prepare working solutions
	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision	PMLTEST402B Prepare standardise and use solutions	Unit superseded - replaced by equivalent unit: MSL974001A Prepare standardise and use solutions
	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision RII40809 Certificate IV in Civil Construction Design	PMLTEST404A Perform chemical tests and procedures	Unit superseded - replaced by equivalent unit: MSL974003A Perform chemical tests and procedures
	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil	PMLTEST406A Perform physical tests	Unit superseded - replaced by equivalent unit: MSL974005A Perform physical tests

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	Construction Supervision RII40809 Certificate IV in Civil Construction Design		
	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision RII40809 Certificate IV in Civil Construction Design	PMLTEST411A Perform mechanical tests	Unit superseded - replaced by equivalent unit: MSL974010A Perform mechanical tests
	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision	PMLSAMP302A Receive and prepare samples for testing	Unit superseded - replaced by equivalent unit: MSL953001A Receive and prepare samples for testing
	RII20509 Certificate II in Resource Processing RII30112 Certificate III in Surface Extraction Operations RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision	PMLTEST300B Perform basic tests	Unit superseded - replaced by equivalent unit: MSL973001A Perform basic tests
	RII40609 Certificate IV in Civil	PMLTEST307B Prepare trial batches for	Unit superseded - replaced by equivalent unit: MSL973006A

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	Construction Operations RII40712 Certificate IV in Civil Construction Supervision	evaluation	Prepare trial batches for evaluation
	RII40712 Certificate IV in Civil Construction Supervision RII40809 Certificate IV in Civil Construction Design RII50409 Diploma of Civil Construction Management RII50509 Diploma of Civil Construction Design	PMLTEST511B Supervise earthworks inspection, sampling and testing operations	Unit superseded - replaced by equivalent unit: MSL975007A Supervise sampling, inspections and testing at construction sites
	RII40712 Certificate IV in Civil Construction Supervision RII40809 Certificate IV in Civil Construction Design RII50409 Diploma of Civil Construction Management RII50509 Diploma of Civil Construction Design	PMLTEST520A Perform complex tests to measure engineering properties of materials	Unit superseded - replaced by equivalent unit: MSL975016A Perform complex tests to measure engineering properties of materials
	RII30112 Certificate III in Surface Extraction Operations	RIIBHD304A Set up and prepare for open cut drilling operations	Unit code changed to RIIBHD304B Correct Performance criteria 2.1 *Prepare rig for moving*
	RII20209 Certificate II in Surface Extraction	RIIBLA203A Conduct mobile mixing of	Unit code changed to RIIBLA203B

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	Operations RII20409 Certificate II in Underground Metalliferous Mining	explosives	Remove *towing* from Required Skills
	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision RII40809 Certificate IV in Civil Construction Design RII50509 Diploma of Civil Construction Design	RIICBS401A Apply the principles of asphalt paving and compaction	Unit code changed to: RIICBS401B Items deemed not relevant removed from Required skills, Required knowledge and Range statement
	RII31009 Certificate III in Bituminous Surfacing RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision RII40809 Certificate IV in Civil Construction Design RII50509 Diploma of Civil Construction Design	RIICBS402A Apply the principles for the application of bituminous sprayed treatment	Unit code changed to: RIICBS402B Items deemed not relevant removed from Required skills, Required knowledge and Range statement
	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate	RIICBS403A Apply the principles for the polymer modified binder	Unit code changed to: RIICBS403B Items deemed not relevant removed from Required skills, Required knowledge and Range

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	IV in Civil Construction Supervision RII40809 Certificate IV in Civil Construction Design RII50509 Diploma of Civil Construction Design		statement
	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision RII40809 Certificate IV in Civil Construction Design RII50509 Diploma of Civil Construction Design	RIICBS404A Apply principles for the selection and use of bituminous emulsion	Unit code changed to: RIICBS404B Items deemed not relevant removed from Required skills, Required knowledge and Range statement Element 2 wording corrected
	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision RII40809 Certificate IV in Civil Construction Design RII50509 Diploma of Civil Construction Design	RIICBS410A Apply the principles for the manufacture of bituminous emulsion	Removed from training package. Not used in civil construction
	RII31409 Certificate III in Road Construction and Maintenance	RIICRC311 Conduct concrete road paver operations	New unit

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	RII31409 Certificate III in Road Construction and Maintenance	RIICRC312 Setup and maintain concrete paver stringlines	New unit
	RII31409 Certificate III in Road Construction and Maintenance	RIICRC313 Conduct concrete road curing and texturing operations	New unit
	RII31409 Certificate III in Road Construction and Maintenance	RIICRC314 Handle concrete materials	New unit
	RII31409 Certificate III in Road Construction and Maintenance	RIICRC315 Use concreting materials and equipment	New unit
	RII31409 Certificate III in Road Construction and Maintenance	RIICRC316 Place and compact concrete	New unit
	RII31409 Certificate III in Road Construction and Maintenance	RIICRC317 Finish concrete pavements	New unit
	RII31409 Certificate III in Road Construction and Maintenance	RIICRC318 Cure concrete	New unit
	RII31409 Certificate III in Road Construction and Maintenance	RIICRC319 Saw and cut concrete pavements to initiate planned cracks	New unit
	RII31409 Certificate III in Road Construction and Maintenance	RIICRC320 Seal concrete pavements	New unit
	RII31409 Certificate III in Road Construction and	RIICRC321 Use automated paving guidance systems	New unit

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	Maintenance		
	RII31409 Certificate III in Road Construction and Maintenance	RIICRC322 Receive, check and record concrete deliveries	New unit
	RII31409 Certificate III in Road Construction and Maintenance	RIICRC323 Insert tie bars in fresh concrete	New unit
	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision	RIICRC406A Apply the principles of pavement maintenance	Unit code changed to RIICRC406B Items deemed not relevant removed from Required skills, Required knowledge and Range statement
	RII40809 Certificate IV in Civil Construction Design RII50509 Diploma of Civil Construction Design	RIICWD524A Prepare design of sprayed seal surfacing	Unit code changed to: RIICWD524B Items deemed not relevant removed from Required skills
	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision RII40809 Certificate IV in Civil Construction Design RII50509 Diploma of Civil Construction Design	RIICWD525A Select pavement surfacing	Unit code changed to: RIICWD525B Items deemed not relevant removed from Required skills
	RII40712 Certificate IV in Civil Construction	RIICWM401A Supervise civil works	Unit code changed to RIICWM401B Addition to range statement under

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	Supervision		Civil Works: *installation of underground services*
	Skill Set Explosion Protected Diesel Engine Systems Maintenance	RIIDES301 Inspect, test and maintain diesel engine systems and their ancillary systems	New unit
	Skill Set Explosion Protected Diesel Engine Systems Maintenance	RIIDES302 Inspect, test and maintain joints on diesel engine systems	New unit
	Skill Set Explosion Protected Diesel Engine Systems Maintenance	RIIDES303 Inspect, test and maintain cooling systems on diesel engine systems	New unit
	Skill Set Explosion Protected Diesel Engine Systems Maintenance	RIIDES304 Inspect, test and maintain inlet systems on diesel engine systems	New unit
	Skill Set Explosion Protected Diesel Engine Systems Maintenance	RIIDES305 Inspect, test and maintain exhaust systems on diesel engine systems	New unit
	Skill Set Explosion Protected Diesel Engine Systems Maintenance	RIIDES306 Inspect, test and maintain safety shutdown systems on diesel engine systems	New unit
	Skill Set Explosion Protected Diesel Engine Systems Maintenance	RIIDES307 Test, determine the cause and rectify excessive emission levels on diesel engine systems	New unit
	RII20609 Certificate II in Mining Field Exploration Operations RII30509 Certificate III in Mining Exploration	RIIEGS305A Navigate in remote or trackless area	Unit code changed to RIIEGS305B Addition to *Maps* and *Sources* in Range Statement

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	RII20309 Certificate II In Underground Coal Mining RII20409 Certificate II in Underground Metalliferous Mining RII30212 Certificate III in Underground Coal Operations RII30311 Certificate III in Underground Metalliferous Mining	RIIERR203A Escape from hazardous situation unaided	Unit code changed to RIIERR203B Edit Performance criteria 1.3, 2.1 and 2.4 Change Method of Assessment to state:• *first hand testimonial evidence of the candidate's:* ◦ *working with undertaking and completing escape from hazardous situation unaided*
	RII20209 Certificate II in Surface Extraction Operations RII20309 Certificate II In Underground Coal Mining RII20409 Certificate II in Underground Metalliferous Mining RII20509 Certificate II in Resource Processing RII20909 Certificate II Drilling Operations RII21109 Certificate II in Drilling Oil Gas On shore RII30912 Certificate III in Civil Construction RII31409 Certificate III in Road Construction and Maintenance RII31509 Certificate	RIIHAN201A Operate a forklift	Unit descriptor: Reference to National Occupational Health and Safety Certification Standards replaced by National Standard for High Risk Work

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	III in Road Marking		
	RII20109 Certificate II in Resources and Infrastructure Work Preparation RII20209 Certificate II in Surface Extraction Operations RII20309 Certificate II In Underground Coal Mining RII20409 Certificate II in Underground Metalliferous Mining RII20509 Certificate II in Resource Processing RII20909 Certificate II Drilling Operations RII21109 Certificate II in Drilling Oil Gas On shore RII30112 Certificate III in Surface Extraction Operations RII30611 Certificate III in Small Mining Operations RII30809 Certificate III in Civil Construction Plant	RIIHAN208A Perform dogging	Unit descriptor: Reference to National Occupational Health and Safety Certification Standards replaced by National Standard for High Risk Work

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	Operations RII30912 Certificate III in Civil Construction RII31009 Certificate III in Bituminous Surfacing RII31109 Certificate III in Bridge Construction and Maintenance RII31209 Certificate III in Civil Foundations RII31309 Certificate III in Pipe Laying RII31409 Certificate III in Road Construction and Maintenance RII31509 Certificate III in Road Marking RII31609 Certificate III in Trenchless Technology RII31709 Certificate III in Tunnel Construction RII32109 Certificate III in Timber Bridge Construction and Maintenance		
		RIIHAN209A Perform basic rigging	Unit descriptor: Reference to National Occupational Health and Safety Certification Standards replaced by National Standard for High Risk Work
	RII20209 Certificate II in Surface Extraction Operations	RIIHAN210A Perform intermediate rigging operations	Unit descriptor: Reference to National Occupational Health and Safety Certification Standards replaced by National Standard for

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	RII20309 Certificate II In Underground Coal Mining RII20409 Certificate II in Underground Metalliferous Mining RII20509 Certificate II in Resource Processing		High Risk Work
	RII20109 Certificate II in Resources and Infrastructure Work Preparation RII20209 Certificate II in Surface Extraction Operations RII20309 Certificate II In Underground Coal Mining RII20712 Certificate II in Civil Construction RII30809 Certificate III in Civil Construction Plant Operations RII30912 Certificate III in Civil Construction RII31109 Certificate III in Bridge Construction and Maintenance RII31209 Certificate III in Civil Foundations RII31309 Certificate III in Pipe Laying RII31409 Certificate III in Road	RIIHAN211A Conduct basic scaffolding operations	Unit descriptor: Reference to National Occupational Health and Safety Certification Standards replaced by National Standard for High Risk Work

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	Construction and Maintenance RII31609 Certificate III in Trenchless Technology RII31709 Certificate III in Tunnel Construction RII32109 Certificate III in Timber Bridge Construction and Maintenance		
	RII20209 Certificate II in Surface Extraction Operations RII20309 Certificate II In Underground Coal Mining RII20409 Certificate II in Underground Metalliferous Mining RII20509 Certificate II in Resource Processing	RIIHAN212A Conduct non-slewing crane operations	Unit descriptor: Reference to National Occupational Health and Safety Certification Standards replaced by National Standard for High Risk Work
	RII20909 Certificate II Drilling Operations	RIIHAN213A Work effectively in the drilling industry	Unit descriptor: Reference to National Occupational Health and Safety Certification Standards replaced by National Standard for High Risk Work

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	RII20712 Certificate II in Civil Construction RII30112 Certificate III in Surface Extraction Operations RII30912 Certificate III in Civil Construction RII31109 Certificate III in Bridge Construction and Maintenance RII31209 Certificate III in Civil Foundations RII31309 Certificate III in Pipe Laying RII31409 Certificate III in Road Construction and Maintenance RII31509 Certificate III in Road Marking RII31609 Certificate III in Trenchless Technology RII31709 Certificate III in Tunnel Construction	RIIHAN301B Operate elevating work platform	Unit descriptor: Reference to National Occupational Health and Safety Certification Standards replaced by National Standard for High Risk Work
	RII20309 Certificate II In Underground Coal Mining RII30112 Certificate III in Surface Extraction Operations RII31109 Certificate III in Bridge Construction and	RIIHAN302A Conduct intermediate scaffolding	Unit descriptor: Reference to National Occupational Health and Safety Certification Standards replaced by National Standard for High Risk Work

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	Maintenance RII32109 Certificate III in Timber Bridge Construction and Maintenance		
	RII30112 Certificate III in Surface Extraction Operations RII30212 Certificate III in Underground Coal Operations RII30311 Certificate III in Underground Metalliferous Mining	RIIHAN304A Conduct slewing crane operations	Unit descriptor: Reference to National Occupational Health and Safety Certification Standards replaced by National Standard for High Risk Work
	RII20309 Certificate II In Underground Coal Mining RII20409 Certificate II in Underground Metalliferous Mining RII30112 Certificate III in Surface Extraction Operations RII30411 Certificate III in Resource Processing	RIIHAN305A Operate a gantry or overhead crane	Unit descriptor: Reference to National Occupational Health and Safety Certification Standards replaced by National Standard for High Risk Work
	RII20309 Certificate II In Underground Coal Mining RII20909 Certificate II Drilling Operations RII21109 Certificate II in Drilling Oil Gas On shore RII30112 Certificate III in Surface	RIIHAN307A Operate a vehicle loading crane	Unit descriptor: Reference to National Occupational Health and Safety Certification Standards replaced by National Standard for High Risk Work

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	Extraction Operations RII30411 Certificate III in Resource Processing RII30912 Certificate III in Civil Construction RII31409 Certificate III in Road Construction and Maintenance RII31509 Certificate III in Road Marking RII31609 Certificate III in Trenchless Technology		
	RII20209 Certificate II in Surface Extraction Operations	RIIMPO205A Operate roller / compactor	Unit code changed to RIIMPO205B Add Coal Mining to application Clarify *lifting* in required skills
	RII20209 Certificate II in Surface Extraction Operations RII20509 Certificate II in Resource Processing RII30112 Certificate III in Surface Extraction Operations RII30112 Certificate III in Surface Extraction Operations	RIIMPO206A Conduct bulk water truck operations	Unit code changed to RIIMPO206B Required knowledge correction: haul truck changed to water truck Required skills: remove reference to hand tools
	RII20409 Certificate II in Underground Metalliferous Mining RII30311 Certificate	RIIMPO209A Conduct underground load, haul, dump truck operations	Unit code and title changed to RIIMPO333 Conduct underground load, haul and dump truck operations

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	III in Underground Metalliferous Mining		AQF level changed from II to III Remove *hand and power tools* from required knowledge
	RII30112 Certificate III in Surface Extraction Operations RII30611 Certificate III in Small Mining Operations RII40212 Certificate IV in Surface Coal Mining Open Cut Examiner	RIIMPO301B Conduct hydraulic excavator operations	Unit code changed to RIIMPO301C Edit Performance Criteria 2.6 and related Range Statement items
	RII20309 Certificate II In Underground Coal Mining RII30311 Certificate III in Underground Metalliferous Mining	RIIMPO307A Conduct wheeled grader operations in underground mines	Unit code changed to RIIMPO307B Remove *string lines* from Required Knowledge
	RII30112 Certificate III in Surface Extraction Operations RII30411 Certificate III in Resource Processing RII40212 Certificate IV in Surface Coal Mining Open Cut Examiner	RIIMPO310A Conduct grader operations	Unit code changed to RIIMPO310B Remove all references to *towing*
	RII30809 Certificate III in Civil Construction Plant Operations	RIIMPO320A Conduct civil construction excavator operations	Unit code changed to RIIMPO320B Addition of missing text to Performance Criteria 5.2
	RII20909 Certificate II Drilling Operations	RIINHB210A Assist surface directional drilling	Unit code changed to RIINHB210B Required knowledge: remove

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	RII31809 Certificate III in Drilling Operations		underground references
	RII31809 Certificate III in Drilling Operations	RIINHB324A Conduct grouting or cementing operations	Unit code and name changed to RIINHB324B Carry out grouting or cementing operations
	RII31809 Certificate III in Drilling Operations	RIIBHD305 Conduct down-hole hammer drilling	New unit
	RII32009 Certificate III in Drilling Oil Gas On shore	RIIOGN301A Prepare and operate drilling fluid systems	Removed from training package. Use RIIOGD203A Prepare and operate drilling fluid systems
	RII30411 Certificate III in Resource Processing	RIIPEO302 Operate and monitor ore car dumpers	New unit
	RII20509 Certificate II in Resource Processing RII30112 Certificate III in Surface Extraction Operations RII30411 Certificate III in Resource Processing	RIIPRO301B Conduct crushing and screening operations	Unit code changed to RIIPRO301C Clarification of Required Skills and Required Knowledge

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	Skill Set Leading Hand RII30112 Certificate III in Surface Extraction Operations RII30212 Certificate III in Underground Coal Operations RII30311 Certificate III in Underground Metalliferous Mining RII30411 Certificate III in Resource Processing RII30611 Certificate III in Small Mining Operations RII30709 Certificate III in Mine Emergency Response and Rescue RII31809 Certificate III in Drilling Operations RII31909 Certificate III in Drilling Oil Gas Off shore RII40109 Certificate IV in Surface Extraction Operations RII40311 Certificate IV in Metalliferous Mining Operations Underground RII40509 Certificate IV in Resource Processing	RIIRIS301A Apply risk management processes	Unit code changed to RIIRIS301B Change references to *controls* to *treatments* throughout Performance criteria edits: 1.3 now A*ccess, interpret and apply existing procedures to control recognised hazards* 1.4 now *Identify hazards not controlled by existing procedures* 2.4 remove *from the appropriate party* Remove 3.2, 3.3 Edit 4.3 Edit 5.1 Rename *Risk Management Systems* in Range Statement to *Existing procedure*s

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	RII40609 Certificate IV in Civil Construction Operations RII40712 Certificate IV in Civil Construction Supervision RII41109 Certificate IV in Drilling Oil Gas On shore		
	RII10109 Certificate I in Resources and Infrastructure Operations RII20109 Certificate II in Resources and Infrastructure Work Preparation RII20409 Certificate II in Underground Metalliferous Mining RII20712 Certificate II in Civil Construction RII20809 Certificate II in Bituminous Surfacing RII21009 Certificate II in Drilling Oil Gas Off shore RII30809 Certificate III in Civil Construction Plant Operations RII30912 Certificate III in Civil Construction	RIISAM203A Use hand and power tools	Unit code changed to RIISAM203B Clarification of Hand and power tools in Range Statement Remove performance criteria relating to power sources, add to Required Knowledge

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	RII31009 Certificate III in Bituminous Surfacing RII31109 Certificate III in Bridge Construction and Maintenance RII31209 Certificate III in Civil Foundations RII31309 Certificate III in Pipe Laying RII31409 Certificate III in Road Construction and Maintenance RII31509 Certificate III in Road Marking RII31609 Certificate III in Trenchless Technology RII31709 Certificate III in Tunnel Construction RII32109 Certificate III in Timber Bridge Construction and Maintenance		

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	RII10109 Certificate I in Resources and Infrastructure Operations RII20712 Certificate II in Civil Construction RII20809 Certificate II in Bituminous Surfacing RII30809 Certificate III in Civil Construction Plant Operations RII30912 Certificate III in Civil Construction RII31009 Certificate III in Bituminous Surfacing RII31109 Certificate III in Bridge Construction and Maintenance RII31209 Certificate III in Civil Foundations RII31309 Certificate III in Pipe Laying RII31409 Certificate III in Road Construction and Maintenance RII31509 Certificate III in Road Marking RII31609 Certificate III in Trenchless Technology RII31709 Certificate III in Tunnel Construction RII32009 Certificate	RIISAM204A Operate small plant and equipment	Unit code changed to RIISAM204B Clarification of *Small plant and equipment* in Range Statement

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	III in Drilling Oil Gas On shore RII32109 Certificate III in Timber Bridge Construction and Maintenance		
	RII20409 Certificate II in Underground Metalliferous Mining RII20909 Certificate II Drilling Operations	RIISAM206A Operate equipment services vehicle underground	Removed from training package. Use RIIVEH203A Operate a light vehicle underground
	RII20409 Certificate II in Underground Metalliferous Mining RII30311 Certificate III in Underground Metalliferous Mining	RIIUND203A Apply shot-crete	Unit code and title changed to RIIUND310 Apply shot-crete underground AQF level changed from II to III Edit Performance Criteria 1.5, 2.2 and 3.1 Item removed from Required Skills Add Civil Construction to application
	RII20409 Certificate II in Underground Metalliferous Mining	RIIVEH203A Operate light vehicle underground	Unit code changed to RIIVEH203B Remove *and/or attachments* from Performance Criteria 1.4
	RII30809 Certificate III in Civil	RIIVEH304A Conduct tip truck operations	Unit code changed to RIIVEH304B

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	Construction Plant Operations RII30912 Certificate III in Civil Construction		Addition of MC category to Range Statement
	RII20509 Certificate II in Resource Processing RII30411 Certificate III in Resource Processing	RIIWBP203A Monitor tailings dam environment	Unit code changed to RIIWBP203B Required skills edited Control, monitor and water quality added to Range statement
	RII20209 Certificate II in Surface Extraction Operations	RTD2022A Carry out natural area restoration works	Unit superseded - replaced by equivalent unit: AHCNAR201A Carry out natural area restoration works
	RII20209 Certificate II in Surface Extraction Operations RII30611 Certificate III in Small Mining Operations RII30809 Certificate III in Civil Construction Plant Operations	RTD2202A Conduct erosion and sediment control activities	Unit superseded - replaced by equivalent unit: AHCSAW201A Conduct erosion and sediment control activities
	RII20209 Certificate II in Surface Extraction Operations RII30611 Certificate III in Small Mining Operations	RTD3034A Implement revegetation works	Unit superseded - replaced by equivalent unit: AHCNAR303A Implement revegetation works
	RII20209 Certificate II in Surface Extraction Operations RII30611 Certificate III in Small Mining Operations	RTD3205A Construct conservation earthworks	Unit superseded - replaced by equivalent unit: AHCSAW301A Construct conservation earthworks

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	RII30809 Certificate III in Civil Construction Plant Operations		
	RII40109 Certificate IV in Surface Extraction Operations RII40311 Certificate IV in Metalliferous Mining Operations Underground RII40509 Certificate IV in Resource Processing	TAAASS301B Contribute to assessment	Unit superseded - replaced by equivalent unit: TAEASS301B Contribute to assessment
	RII40109 Certificate IV in Surface Extraction Operations RII40212 Certificate IV in Surface Coal Mining Open Cut Examiner RII40311 Certificate IV in Metalliferous Mining Operations Underground RII40509 Certificate IV in Resource Processing RII40909 Certificate IV in Drilling Operations RII41109 Certificate IV in Drilling Oil Gas On shore	TAAASS402C Assess competence	Unit superseded - replaced by equivalent unit: TAEASS402B Assess competence
	RII40109 Certificate IV in Surface Extraction Operations RII40311 Certificate IV in Metalliferous	TAAASS404B Participate in assessment validation	Unit superseded - replaced by equivalent unit: TAEASS403B Participate in assessment validation

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	Mining Operations Underground RII40509 Certificate IV in Resource Processing RII40909 Certificate IV in Drilling Operations RII41109 Certificate IV in Drilling Oil Gas On shore		
	RII31809 Certificate III in Drilling Operations RII31909 Certificate III in Drilling Oil Gas Off shore RII32009 Certificate III in Drilling Oil Gas On shore RII40109 Certificate IV in Surface Extraction Operations RII40311 Certificate IV in Metalliferous Mining Operations Underground RII40509 Certificate IV in Resource Processing	TAADEL301C Provide training through instruction and demonstration of work skills	Unit superseded - replaced by equivalent unit: TAEDEL301A Provide work skill instruction
	RII30411 Certificate III in Resource Processing	TLIA907E Complete and check import/export documentation	Unit superseded - replaced by equivalent unit: TLIA2009A Complete and check import/export documentation
	RII30112 Certificate III in Surface Extraction Operations	TLIC407D Drive heavy rigid vehicle	Unit superseded - replaced by equivalent unit: TLIC3004A Drive heavy rigid vehicle
	RII20209 Certificate	TLID2207C Conduct	Unit superseded - replaced by

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	II in Surface Extraction Operations RII30112 Certificate III in Surface Extraction Operations	weighbridge operations	equivalent unit: TLID2022A Conduct weighbridge operations

Skill Sets and Qualifications			
	Skill Set Explosion Protected Diesel Engine Systems Maintenance	RIIDES301 Inspect, test and maintain diesel engine systems and ancillary systems RIIDES302 Inspect, test and maintain joints on diesel engine systems RIIDES303 Inspect, test and maintain cooling systems on diesel engine systems RIIDES304 Inspect, test and maintain inlet systems on diesel engine systems RIIDES305 Inspect, test and maintain exhaust systems on diesel engine systems RIIDES306 Inspect, test and maintain safety shutdown systems on diesel engine systems RIIDES307 Test, determine the cause and rectify excessive emission levels on diesel engine systems	New Skill Set for regulated activity - maintenance of explosion protected diesel engine systems for vehicles used in underground coal mines.
	Skill Set Work Zone Traffic Control - Road Labourer	RIIOHS201A Work safely and follow OHS policies and work	New Skill Set as advised by AustRoads Report - Implementing National Best Practice for Traffic Control at Roadwork Sites -

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		procedures. RIICOM201A Communicate in the workplace.	Training and Accreditation
	Skill Set Work Zone Traffic Control - Traffic Controller	RIIOHS201A Work safely and follow OHS policies and work procedures. RIIOHS205A Control traffic with a stop/slow bat. RIICOM201A Communicate in the workplace.	New Skill Set as advised by AustRoads Report - Implementing National Best Practice for Traffic Control at Roadwork Sites - Training and Accreditation
	Skill Set Work Zone Traffic Control - Implement Traffic Control Guidance Plan	RIIOHS201A Work safely and follow OHS policies and work procedures. RIICOM201A Communicate in the workplace. RIIOHS302A Implement traffic management plan.	New Skill Set as advised by AustRoads Report - Implementing National Best Practice for Traffic Control at Roadwork Sites - Training and Accreditation
	Skill Set Work Zone Traffic Control - Supervisor	RIIOHS201A Work safely and follow OHS policies and work procedures RIIRIS301A Apply risk management processes RIIGOV401A Apply monitor and report on compliance systems RIIOHS302A Implement traffic management plan	New Skill Set as advised by AustRoads Report - Implementing National Best Practice for Traffic Control at Roadwork Sites - Training and Accreditation

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		RIIBEF402A Supervise on-site operations	
	Skill Set Work Zone Traffic Control Guidance Plan - Developer	RIIOHS201A Work safely and follow OHS policies and work procedures. RIIRIS301A Apply risk management processes. RIIGOV401A Apply monitor and report on compliance systems. RIICWD503A Prepare work zone traffic management plan.	New Skill Set as advised by AustRoads Report - Implementing National Best Practice for Traffic Control at Roadwork Sites - Training and Accreditation
	Skill Set Work Zone Traffic Control - Auditor / Inspector	RIIOHS201A Work safely and follow OHS policies and work procedures. RIIRIS301A Apply risk management processes. RIIGOV401A Apply monitor and report on compliance systems. RIICWD503A Prepare work zone traffic management plan.	New Skill Set as advised by AustRoads Report - Implementing National Best Practice for Traffic Control at Roadwork Sites - Training and Accreditation

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	Skill Set Underground Coal Mine Safety	RIIOHS201A Work safely and follow OHS policies and procedures RIIERR205A Apply initial first aid RIIGOV201A Comply with site work processes/procedures RIIRIS201B Conduct local risk control RIICOM201A Communicate in the workplace RIIERR203B Escape from a hazardous situation unaided	New Skill Set in response to Recognised Standard 11 Training in Coal Mines under the Coal Mining Safety and Health Act 1999 (QLD). This skill set is applicable to underground coal mine workers. Note: title corrected between draft and final
	Skill Set Surface Coal Mine Safety	RIIOHS201A Work safely and follow OHS policies and procedures RIIERR205A Apply initial first aid RIIGOV201A Comply with site work processes/procedures RIIRIS201B Conduct local risk control RIICOM201A Communicate in the workplace RIIERR302A Respond to local emergencies and incidents	New Skill Set in response to Recognised Standard 11 Training in Coal Mines under the Coal Mining Safety and Health Act 1999 (QLD) This skill set is applicable to surface coal mine workers. Note: title corrected between draft and final
	All qualifications		Title for *Mandatory Units* changed to *Core Units* Elective titles changed from *Specialist Electives* and *General Electives* to *Group (#) Electives* in accordance with Flexibility in Packaging Rules requirements.

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			Import rule clarified to specify AQF level of units able to be imported
	All qualifications for occupations not regulated: RII10109 Certificate I in Resources and Infrastructure Operations RII20109 Certificate II in Resources and Infrastructure Work Preparation RII20609 Certificate II in Mining Field/Exploration Operations RII20712 Certificate II in Civil Construction RII20809 Certificate II in Bituminous Surfacing RII30909 Certificate III in Civil Construction RII31609 Certificate III in Trenchless Technology RII40609 Certificate IV in Civil Construction Operations RII40709 Certificate IV in Civil Construction Supervision RII40809 Certificate		Amendment to packaging rules to allow for units of competency from accredited courses to be imported: Imported unit text added: *or accredited course* *Units of competency chosen must* *- be relevant to the competency requirements for the job function* *- reflect the competency profile for the occupation at the enterprise level* *- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.*

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	IV in Civil Construction Design RII50309 Diploma of Minerals Processing RII50409 Diploma of Civil Construction Management RII50509 Diploma of Civil Construction Design RII60509 Advanced Diploma of Civil Construction Design RII60609 Advanced Diploma of Civil Construction		
	RII10109 Certificate I in Resources and Infrastructure Operations		Packaging rules: allow import of units from other training package at AQF level I.
	RII20712 Certificate II in Civil Construction		Code changed to RII20712 Flexibility in packaging rules policy response: Successful completion of sixteen (16) units of competency made up of: • ten (10) core units (not 13), and • six (6) Group A elective units (not 3) of which: ◦ at least two (3) must come from the electives listed below ◦ up to three (3) units (not 1) may come from Certificate II or Certificate III level from this, or any other Training Package - up to two (2) units may come from an accredited coruse at AQF

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			II to III level Core units moved to Group A Electives: RIIWMG203A Drain and dewater civil construction site RIICCM208A Carry out basic levelling RIISAM201A Handle resources and infrastructure materials and safely dispose of non toxic materials
	RII30111 Certificate III in Surface Extraction Operations		Code changed to RII30112 Core units: Remove RIICOM301B Communicate information Group B electives: Add RIICOM301B Communicate information
	RII30209 Certificate III in Underground Coal Operations		Code changed to RII30209 Core units: Replace RIICOM301B Communicate information with RIICOM302A Communicate workplace information Group B electives: Add RIICOM301B Communicate information
	RII30311 Certificate III in Underground Metalliferous Mining		Move RIIERR203B Escape from a hazardous situation unaided from Group B to Group A electives
	RII30411 Certificate III in Resource Processing		Group B Elective: Remove duplicate units RIIPGP201A Conduct pump operations RIIPGP202A Handle reagents

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			Add RIIMPO322A Conduct operations with skid steer loader
	RII30909 Certificate III in Civil Construction		Code changed to RII30912 Flexibility in packaging rules policy response:Eight (8) Certificate III Civil Construction qualifications merged to form one qualification with 8 Specialist streams Stream 1 – Bituminous Surfacing Stream 2 – Bridge Construction and Maintenance Stream 3 – Pipe Laying Stream 4 – Road Construction and Maintenance Stream 5 – Road Marking Stream 6 – Tunnel Construction Stream 7 – Timber Bridge Construction and Maintenance Stream 8 – Civil Construction General Core and Elective units modified in accordance with packaging rules policy Qualifications removed and incorporated in this qualification: RII31009 Certificate III in Bituminous Surfacing RII31109 Certificate III in Bridge Construction and Maintenance RII31309 Certificate III in Pipe Laying RII31409 Certificate III in Road Construction and Maintenance RII31509 Certificate III in Road Marking

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			RII31709 Certificate III in Tunnel Construction RII32109 Certificate III in Timber Bridge Construction and Maintenance
	RII31609 Certificate III in Trenchless Technology		Addition to Group A electives RIICTC301A Install tunnelling constructions services RIICTC302A Line tunnel RIICTC303A Excavate tunnel by machine RIICTC304A Muck out tunnel earthworks RIICTC305A Construct portals RIICPL301A Install water mains pipelines RIICPL302A Install storm water systems RIICPL303A Install sewer pipelines RIICPL304A Install pre-cast gully pits

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			RIICPL305A Install pre-cast access chambers RIICCM301A Construct and dismantle fences and gates RIIMPO319A Conduct backhoe/loader operations RIIMPO320A Conduct civil construction excavator operations
	RII31809 Certificate III in Drilling Operations		Packaging rules: Remove requirement for assist unit to be completed for each conduct unit undertaken. Group A Electives: Added RIIBHD305 Conduct down-hole drilling Added RIINHB324B Conduct grouting or cementing operations Group B Electives: Added RIIBHD301A Conduct surface blast hole drilling operations and RIIBHD304A Set-up and prepare for open cut drilling operations
	RII40209 Certificate IV in Surface Coal Mining (Open Cut Examiner)		Qualification code change to RII40212 Core units: Increase to ten (10), add BSBSUS301A Implement and monitor environmentally sustainable practices, individuals can select to complete either RIIBLA201A OR RIIBLA301A - remove advisory text regarding differing State requirements in NSW and QLD
	RII40311 Certificate IV in Metalliferous Mining Operations (Underground)		Group A Electives: Remove duplicate unit BSBOHS407A Monitor a safe workplace

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	RII40411 Certificate IV in Coal Underground Operations		Qualification code change to RII40412 Core units: Increase to ten (10), add RIIMCU406A Apply and monitor the inrush management plan, individuals can select to complete either RIIBLA202B OR RIIBLA302A - remove advisory text regarding differing State requirements in NSW and QLD Group B electives: Add RIILAT401A Provide leadership in the supervision of Indigenous Australian employees
	RII40709 Certificate IV in Civil Construction Supervision		Qualification code changed to RII40712 Packaging rules to be revised to include up to two units from this or another training package RIICWM401A moved from Core units to Group A Electives and packaging rules updated to state: *must complete either RIICWM401AOR an Apply the principles of unit* Group B Electives: Add NWP440A Supervise conduit inspection and reporting (for supervisors and managers) TAEDEL301A Provide work skill instruction
	RII40909 Certificate IV in Drilling Operations		Group A Electives: Add RIIBEF401A Manage non-routine complex technical situations
	RII50409 Diploma of Civil Construction Management		Packaging rules: clarification of number of packaging rules

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	RII50909 Diploma of Underground Coal Mining Management		Qualification code change to RII50912 Core units: Increase to ten (10), add RIIMCU505A Implement the inrush management plan, individuals can select to complete either RIIBLA202B OR RIIBLA302A - remove advisory text regarding differing State requirements in NSW and QLD
	RII60309 Advanced Diploma of Underground Coal Mining Management		Qualification code change to RII60312 Core units: Increase to ten (10), add RIIMCU406A Apply and monitor the inrush management plan, individuals can select to complete either RIIBLA202B OR RIIBLA302A - remove advisory text regarding differing State requirements in NSW and QLD
3.1	RII20712 Cert II Civil Construction RII30912 Cert III Civil Construction RII31409 Cert III Road Construction and Maintenance RII32109 Cert III Timber Bridge Construction Maintenance	FPICOT2221B Trim and cut felled trees	FPICOT2239A Trim and cut felled trees
	RII30912 Cert III Civil Construction	UEGNSG202A Construct and lay distribution pipelines	UEGNSG202B Construct and lay distribution pipelines
	RII30411 Cert III Resources Processing	FPPSTM4A Troubleshoot and rectify boiler plant systems	FPPSTM440A Troubleshoot and rectify boiler plant systems
	RII30411 Cert III Resource Processing	UEPOPS316A Operate and monitor boiler	UEPOPS316B Operate and monitor boiler steam/water

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		steam/water	
	RII21109 Cert II Drilling Oil/Gas (On shore)	MSAPMPER200B Work in accordance with an issued permit	MSAPMPER200C Work in accordance with an issued permit
	RII30411 Cert III in Resource Processing RII30112 Cert III in Surface Extraction Operations RII30111 Certificate III in Surface Extraction Operations	PMLOHS301B Work safely with instruments that emit ionising radiation	MSL943001A Work safely with instruments that emit ionizing radiation.
	RII21009 Cert II in Drilling Oil/Gas (Off shore) RII20909 Cert II in Drilling Operations RII20409 Cert II in Underground Metalliferous Mining	BSBWOR203A Work effectively with others	BSBWOR203B Work effectively with others
	RII60509 Advanced Diploma of Civil Construction Design RII50912 Diploma of Underground Coal Mining Management RII50909 Diploma of Underground Coal Mining Management RII50809 Diploma of Drilling Oil/Gas (On shore) RII50709 Diploma of Drilling Oil/Gas (Off shore) RII50609 Diploma	BSBWOR502A Ensure team effectiveness	BSBWOR502B Ensure team effectiveness

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	of Drilling Operations RII50509 Diploma of Civil Construction Design RII50409 Diploma of Civil Construction Management RII50309 Diploma of Minerals Processing RII50209 Diploma of Underground Metalliferous Mining Management RII50109 Diploma of Surface Operations Management		
	RII60609 Advanced Diploma of Civil Construction RII60509 Advanced Diploma of Civil Construction Design RII60409 Advanced Diploma of Drilling Management	BSBSMB405A Monitor and manage small business operations	BSBSMB405B Monitor and manage small business operations
	RII50912 Diploma of Underground Coal Mining Management RII50909 Diploma of Underground Coal Mining Management RII50509 Diploma of Civil Construction Design RII50409 Diploma	BSBWOR501A Manage personal work priorities and professional development	BSBWOR501B Manage professional work priorities and professional development

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	of Civil Construction Management RII50309 Diploma of Minerals Processing RII50209 Diploma of Underground Metalliferous Mining Management RII50109 Diploma of Surface Operations Management		
	RII30112 Cert III in Surface Extraction Operations RII30111 Cert III in Surface Extraction Operations	PMLORG301A Plan and conduct laboratory/field work	MSL913002A Plan and conduct laboratory/field work
	RII40909 Certificate IV in Drilling Operations	BSBRKG403B Set up a business or records system for a small business	BSBRKG403C Set up a business or records system for a small business
	RII40109 Certificate IV in Surface Extraction Operations RII20309 Certificate II in Underground Coal Mining	ICAU3126B Use advanced features of computer applications	ICAICT308A Use advanced features of computer applications
	RII31009 Certificate III in Bituminous Surfacing RII30912 Certificate III in Civil Construction RII30909 Certificate III in Civil Construction	BSBCUS301A Deliver and monitor a service to customers	BSBCUS301B Deliver and monitor a service to customers

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	RII41109 Certificate IV in Drilling Oil/Gas (On shore) RII40909 Certificate IV in Drilling Operations RII40712 Certificate IV in Civil Construction Supervision RII40709 Certificate IV in Civil Construction Supervision RII40509 Certificate IV in Resource Processing RII40412 Certificate IV in Underground Coal Operations RII40212 Certificate IV in Surface Coal Mining (Open Cut Examiner) RII40209 Certificate IV in Surface Coal Mining (Open Cut Examiner) RII40109 Certificate IV in Surface Extraction Operations	BSBCUS401A Coordinate implementation of customer service strategies	BSBCUS401B Coordinate implementation of customer service strategies
	RII41109 Certificate IV in Drilling Oil/Gas (On shore) RII40909 Certificate IV in Drilling Operations RII40509 Certificate IV in Resource Processing RII40311 Certificate	TAAASS401C Plan and organise assessment	TAEASS401A Plan and organise assessment

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	IV in Metalliferous Mining Operations (Underground) RII40212 Certificate IV in Surface Coal Mining (Open Cut Examiner) RII40209 Certificate IV in Surface Coal Mining (Open Cut Examiner) RII40109 Certificate IV in Surface Extraction Operations		
	RII31409 Certificate III in Road Construction and Maintenance RII30912 Certificate III in Civil Construction RII30909 Certificate III in Civil Construction	TLID1107C Conduct specialised forklift operations	TLID3011A Conduct specialised forklift operations

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	RII41109 Certificate IV in Drilling Oil/Gas (On shore) RII41009 Certificate IV in Drilling Oil/Gas (Off shore) RII40909 Certificate IV in Drilling Operations RII40509 Certificate IV in Resource Processing RII40311 Certificate IV in Metalliferous Mining Operations (Underground) RII40109 Certificate IV in Surface Extraction Operations RII31909 Certificate III in Drilling Oil/Gas (Off shore) RII31809 Certificate III in Drilling Operations RII30809 Certificate III in Civil Construction Plant Operations RII30709 Certificate III in Mine Emergency Response and Rescue RII30611 Certificate III in Small Mining Operations RII30509 Certificate III in Mining Exploration RII30112 Certificate	HLTFA301B Apply first aid	HLTFA301C Apply first aid

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	III in Surface Extraction Operations RII30111 Certificate III in Surface Extraction Operations RII21109 Certificate II in Drilling Oil/Gas (On shore) RII21009 Certificate II in Drilling Oil/Gas (Off shore) RII20909 Certificate II in Drilling Operations RII20609 Certificate II in Mining Field/Exploration Operations RII20409 Certificate II in Underground Metalliferous Mining RII20109 Certificate II in Resources and Infrastructure Work Preparation RII10109 Certificate I in Resources and Infrastructure Operations		

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	RII41109 Certificate IV in Drilling Oil/Gas (On shore) RII41009 Certificate IV in Drilling Oil/Gas (Off shore) RII40909 Certificate IV in Drilling Operations RII40509 Certificate IV in Resource Processing RII31909 Certificate III in Drilling Oil/Gas (Off shore) RII31809 Certificate III in Drilling Operations RII30709 Certificate III in Mine Emergency Response and Rescue RII30509 Certificate III in Mining Exploration RII20609 Certificate II in Mining Field/Exploration Operations	HLTFA402B Apply advanced first aid	HLTFA402C Apply advanced first aid
	RII31409 Certificate III in Road Construction and Maintenance RII30912 Certificate III in Civil Construction RII30909 Certificate III in Civil Construction RII20712 Certificate	FPIFGM3204A Fall trees manually (intermediate)	FPIFGM3212 Fall trees manually (intermediate)

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	II in Civil Construction RII20709 Certificate II in Civil Construction		
	RII30912 Certificate III in Civil Construction	FPICOT2221B Trim and cross cut felled trees	FPICOT2239A Trim and cut felled trees
	RII30112 Surface Extraction Operations RII30311 Underground Metalliferous Mining RII30411 Resource Processing	FPPSTM2A Monitor and control boiler operations	FPPSTM210A Monitor and control boiler operation
	RII30411 Resource Processing	FPPSTM4A Troubleshoot ad rectify boiler plant systems	FPPSTM440A Troubleshoot and rectify boiler plant systems
	RII30411 Resource Processing	UEPOPS242A Operate and monitor dust collection plant	UEPOPS242B Operate and monitor dust collection plant
	RII41109 Certificate IV in Drilling Oil/Gas (On shore) RII32009 Certificate III in Drilling Oil/Gas (On shore) RII30411 Certificate III in Resource Processing RII30311 Certificate III in Underground Metalliferous	MSAPMPER300B Issue work permits	MSAPMPER300C Issue work permits

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	Mining RII30112 Certificate III in Surface Extraction Operations		
	RII30411 Certificate III in Resource Processing	UEPOPS316A Operate and monitor boiler steam/water cycle	UEPOPS316B Operate and monitor boiler steam/water cycle
	RII30709 Certificate III in Mine Emergency Response and Rescue	PUAFIR307A Monitor hazardous atmospheres	PUAFIR307B Monitor hazardous atmospheres
	RII40809 Certificate IV in Civil Construction Design RII40712 Certificate IV in Civil Construction Supervision RII40709 Certificate IV in Civil Construction Supervision RII40609 Certificate IV in Civil Construction Operations	PMLTEST403A Assist with geotechnical site investigations	PMLTEST403B Assist with geotechnical site investigations
	RII31809 Certificate III in Drilling Operations RII20909 Certificate II in Surface Extraction Operations	RIINHB211A Assist mud rotary boring	RIINHB211B Assist mud rotary drilling
	RII30709 Certificate III in Mine Emergency Response and Rescue	Missing prerequisite for PUAFIR207B Operate breathing apparatus open circuit	PUAFIR201B Prevent injury

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	RII30709 Certificate III in Mine Emergency Response and Rescue	Missing prerequisite for PUASAR024A Undertake road crash rescue	PUASAR022A Participate in a rescue operation
	RII30709 Certificate III in Mine Emergency Response and Rescue	Missing prerequisite for PUASAR025A Undertake confined space rescue	PUASAR022A Participate in a rescue operation
	RII30709 Certificate III in Mine Emergency Response and Rescue	Missing prerequisite for PUASAR032A Undertake vertical rescue	PUASAR022A Participate in a rescue operation
	RII30709 Certificate III in Mine Emergency Response and Rescue	Missing prerequisite for PUAFIR306B Render hazardous materials incidents safe	PUAFIR308B Employ Personal Protection at a Hazardous Materials Incident
3.2	RII20712 Cert II Civil Construction RII30912 Cert III Civil Construction RII31409 Cert III Road Construction and Maintenance RII32109 Cert III Timber Bridge Construction Maintenance	FPICOT2221B Trim and cut felled trees	FPICOT2239A Trim and cut felled trees
	RII30912 Cert III Civil Construction	UEGNSG202A Construct and lay distribution pipelines	UEGNSG202B Construct and lay distribution pipelines
	RII30411 Cert III Resources Processing	FPPSTM4A Troubleshoot and rectify boiler plant systems	FPPSTM440A Troubleshoot and rectify boiler plant systems
	RII30411 Cert III Resource Processing	UEPOPS316A Operate and monitor boiler	UEPOPS316B Operate and monitor boiler steam/water

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		steam/water	
	RII21109 Cert II Drilling Oil/Gas (On shore)	MSAPMPER200B Work in accordance with an issued permit	MSAPMPER200C Work in accordance with an issued permit
	RII30411 Cert III in Resource Processing RII30112 Cert III in Surface Extraction Operations RII30111 Certificate III in Surface Extraction Operations	PMLOHS301B Work safely with instruments that emit ionising radiation	MSL943001A Work safely with instruments that emit ionizing radiation.
	RII21009 Cert II in Drilling Oil/Gas (Off shore) RII20909 Cert II in Drilling Operations RII20409 Cert II in Underground Metalliferous Mining	BSBWOR203A Work effectively with others	BSBWOR203B Work effectively with others
	RII60509 Advanced Diploma of Civil Construction Design RII50912 Diploma of Underground Coal Mining Management RII50909 Diploma of Underground Coal Mining Management RII50809 Diploma of Drilling Oil/Gas (On shore) RII50709 Diploma of Drilling Oil/Gas (Off shore) RII50609 Diploma	BSBWOR502A Ensure team effectiveness	BSBWOR502B Ensure team effectiveness

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	of Drilling Operations RII50509 Diploma of Civil Construction Design RII50409 Diploma of Civil Construction Management RII50309 Diploma of Minerals Processing RII50209 Diploma of Underground Metalliferous Mining Management RII50109 Diploma of Surface Operations Management		
	RII60609 Advanced Diploma of Civil Construction RII60509 Advanced Diploma of Civil Construction Design RII60409 Advanced Diploma of Drilling Management	BSBSMB405A Monitor and manage small business operations	BSBSMB405B Monitor and manage small business operations
	RII50912 Diploma of Underground Coal Mining Management RII50909 Diploma of Underground Coal Mining Management RII50509 Diploma of Civil Construction Design RII50409 Diploma	BSBWOR501A Manage personal work priorities and professional development	BSBWOR501B Manage professional work priorities and professional development

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	of Civil Construction Management RII50309 Diploma of Minerals Processing RII50209 Diploma of Underground Metalliferous Mining Management RII50109 Diploma of Surface Operations Management		
	RII30112 Cert III in Surface Extraction Operations RII30111 Cert III in Surface Extraction Operations	PMLORG301A Plan and conduct laboratory/field work	MSL913002A Plan and conduct laboratory/field work
	RII40909 Certificate IV in Drilling Operations	BSBRKG403B Set up a business or records system for a small business	BSBRKG403C Set up a business or records system for a small business
	RII40109 Certificate IV in Surface Extraction Operations RII20309 Certificate II in Underground Coal Mining	ICAU3126B Use advanced features of computer applications	ICAICT308A Use advanced features of computer applications
	RII31009 Certificate III in Bituminous Surfacing RII30912 Certificate III in Civil Construction RII30909 Certificate III in Civil Construction	BSBCUS301A Deliver and monitor a service to customers	BSBCUS301B Deliver and monitor a service to customers

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	RII41109 Certificate IV in Drilling Oil/Gas (On shore) RII40909 Certificate IV in Drilling Operations RII40712 Certificate IV in Civil Construction Supervision RII40709 Certificate IV in Civil Construction Supervision RII40509 Certificate IV in Resource Processing RII40412 Certificate IV in Underground Coal Operations RII40212 Certificate IV in Surface Coal Mining (Open Cut Examiner) RII40209 Certificate IV in Surface Coal Mining (Open Cut Examiner) RII40109 Certificate IV in Surface Extraction Operations	BSBCUS401A Coordinate implementation of customer service strategies	BSBCUS401B Coordinate implementation of customer service strategies
	RII41109 Certificate IV in Drilling Oil/Gas (On shore) RII40909 Certificate IV in Drilling Operations RII40509 Certificate IV in Resource Processing RII40311 Certificate	TAAASS401C Plan and organise assessment	TAEASS401A Plan and organise assessment

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	IV in Metalliferous Mining Operations (Underground) RII40212 Certificate IV in Surface Coal Mining (Open Cut Examiner) RII40209 Certificate IV in Surface Coal Mining (Open Cut Examiner) RII40109 Certificate IV in Surface Extraction Operations		
	RII31409 Certificate III in Road Construction and Maintenance RII30912 Certificate III in Civil Construction RII30909 Certificate III in Civil Construction	TLID1107C Conduct specialised forklift operations	TLID3011A Conduct specialised forklift operations

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	RII41109 Certificate IV in Drilling Oil/Gas (On shore) RII41009 Certificate IV in Drilling Oil/Gas (Off shore) RII40909 Certificate IV in Drilling Operations RII40509 Certificate IV in Resource Processing RII40311 Certificate IV in Metalliferous Mining Operations (Underground) RII40109 Certificate IV in Surface Extraction Operations RII31909 Certificate III in Drilling Oil/Gas (Off shore) RII31809 Certificate III in Drilling Operations RII30809 Certificate III in Civil Construction Plant Operations RII30709 Certificate III in Mine Emergency Response and Rescue RII30611 Certificate III in Small Mining Operations RII30509 Certificate III in Mining Exploration RII30112 Certificate	HLTFA301B Apply first aid	HLTFA301C Apply first aid

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	III in Surface Extraction Operations RII30111 Certificate III in Surface Extraction Operations RII21109 Certificate II in Drilling Oil/Gas (On shore) RII21009 Certificate II in Drilling Oil/Gas (Off shore) RII20909 Certificate II in Drilling Operations RII20609 Certificate II in Mining Field/Exploration Operations RII20409 Certificate II in Underground Metalliferous Mining RII20109 Certificate II in Resources and Infrastructure Work Preparation RII10109 Certificate I in Resources and Infrastructure Operations		

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	RII41109 Certificate IV in Drilling Oil/Gas (On shore) RII41009 Certificate IV in Drilling Oil/Gas (Off shore) RII40909 Certificate IV in Drilling Operations RII40509 Certificate IV in Resource Processing RII31909 Certificate III in Drilling Oil/Gas (Off shore) RII31809 Certificate III in Drilling Operations RII30709 Certificate III in Mine Emergency Response and Rescue RII30509 Certificate III in Mining Exploration RII20609 Certificate II in Mining Field/Exploration Operations	HLTFA402B Apply advanced first aid	HLTFA402C Apply advanced first aid
	RII31409 Certificate III in Road Construction and Maintenance RII30912 Certificate III in Civil Construction RII30909 Certificate III in Civil Construction RII20712 Certificate II in Civil	FPIFGM3204A Fall trees manually (intermediate)	FPIFGM3212 Fall trees manually (intermediate)

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	Construction RII20709 Certificate II in Civil Construction		
	RII30912 Certificate III in Civil Construction	FPICOT2221B Trim and cross cut felled trees	FPICOT2239A Trim and cut felled trees
	RII30112 Surface Extraction Operations RII30311 Underground Metalliferous Mining RII30411 Resource Processing	FPPSTM2A Monitor and control boiler operations	FPPSTM210A Monitor and control boiler operation
	RII30411 Resource Processing	FPPSTM4A Troubleshoot ad rectify boiler plant systems	FPPSTM440A Troubleshoot and rectify boiler plant systems
	RII30411 Resource Processing	UEPOPS242A Operate and monitor dust collection plant	UEPOPS242B Operate and monitor dust collection plant
	RII41109 Certificate IV in Drilling Oil/Gas (On shore) RII32009 Certificate III in Drilling Oil/Gas (On shore) RII30411 Certificate III in Resource Processing RII30311 Certificate III in Underground Metalliferous	MSAPMPER300B Issue work permits	MSAPMPER300C Issue work permits

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	Mining RII30112 Certificate III in Surface Extraction Operations		
	RII30411 Certificate III in Resource Processing	UEPOPS316A Operate and monitor boiler steam/water cycle	UEPOPS316B Operate and monitor boiler steam/water cycle
	RII30709 Certificate III in Mine Emergency Response and Rescue	PUAFIR307A Monitor hazardous atmospheres	PUAFIR307B Monitor hazardous atmospheres
	RII40809 Certificate IV in Civil Construction Design RII40712 Certificate IV in Civil Construction Supervision RII40709 Certificate IV in Civil Construction Supervision RII40609 Certificate IV in Civil Construction Operations	PMLTEST403A Assist with geotechnical site investigations	PMLTEST403B Assist with geotechnical site investigations
	RII31809 Certificate III in Drilling Operations RII20909 Certificate II in Surface Extraction Operations	RIINHB211A Assist mud rotary boring	RIINHB211B Assist mud rotary drilling
	RII30709 Certificate III in Mine Emergency Response and Rescue	Missing prerequisite for PUAFIR207B Operate breathing apparatus open circuit	PUAFIR201B Prevent injury

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	RII30709 Certificate III in Mine Emergency Response and Rescue	Missing prerequisite for PUASAR024A Undertake road crash rescue	PUASAR022A Participate in a rescue operation
	RII30709 Certificate III in Mine Emergency Response and Rescue	Missing prerequisite for PUASAR025A Undertake confined space rescue	PUASAR022A Participate in a rescue operation
	RII30709 Certificate III in Mine Emergency Response and Rescue	Missing prerequisite for PUASAR032A Undertake vertical rescue	PUASAR022A Participate in a rescue operation
	RII30709 Certificate III in Mine Emergency Response and Rescue	Missing prerequisite for PUAFIR306B Render hazardous materials incidents safe	PUAFIR308B Employ Personal Protection at a Hazardous Materials Incident

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Introduction to the Industry

The resources and infrastructure industry includes operations in:

- Metalliferous Mining (including Mineral Exploration and Metalliferous Processing)
- Coal Mining (including Coal Handling and Preparation)
- Drilling
- Quarrying (extractive industries)
- Civil Construction

The Resources and Infrastructure Industry contributes 39% of the nation's exports and 8% of GDP.
The National Resources Sector Employment Taskforce Resourcing the Future Report released in July 2010, reported that the major resources projects underway, or likely to be sanctioned before the end of 2015, will create numerous jobs but have different requirements in the construction and operational phases. Taskforce analysis shows:

- construction jobs on new projects could peak at 45,000 in 2012 and 2013
- employment growth in mining operations is expected to be 4.9 per cent per annum over the next five years, creating around 61,500 new jobs by 2015

A brief overview of each industry sector is provided below. For further information refer to the SkillsDMC Environmental Scan available at www.skillsdmc.com.au.

Metalliferous Mining Industry

The Metalliferous Mining sector includes metals, industrial minerals and semiprecious stones and covers the following activities:
· open cut mining
· underground mining
· mine development
· processing - primary/secondary/tertiary
· haulage and transport on site
· site rehabilitation
· blasting
· production and development drilling.
Metallic minerals include: bauxite, iron ore, lead concentrate, mineral sands, beneficiated ilmenite, ilmenite concentrate, leucoxene concentrate, rutile concentrate, zircon concentrate, zinc concentrate and zinc-lead concentrate.
Australia is the world's leading producer of bauxite and alumina, diamonds (by volume), ilmenite, rutile and zircon. It is the second largest producer of iron ore, the third largest producer of aluminium, iron ore, nickel and gold. Australia's volume of export of these commodities overseas means it has the largest bulk commodity mineral shipping task of any nation in the world.
Significant infrastructure development has occurred in the sector. Since 1967, the industry has built 25 towns, 12 ports, 25 airfields and over 2000 kilometres of rail line as well as additional port bulk handling infrastructure in many existing ports. The industry is often the sole provider of social infrastructure - health, education and welfare - in remote areas of Australia ; infrastructure that often endures past the completion of mining activities.

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The Australian Mining Industry is heavily regulated at both federal and state/territory level. State/territory Governments are responsible for regulatory issues such as occupational health and safety, and environmental concerns. Activities for such issues are generally administered by the state/territory's Department of Mineral Resources (or its equivalent).
The mining industry is also open to native title land claims under the *Native Title Act 1994* (commonly known as Mabo legislation). The Act recognises that Indigenous people have rights to the land which they occupied prior to and continuously since European settlement in 1788.
Regulations governing environmental protection (including taxes, levies, fines and licences) have increased in recent years; they will continue to increase and, significantly, do so in the immediate future. The increased emphasis on environmental issues has raised the importance of remediation work for the mining and minerals processing industry.
Despite the high level of expenditure and commitment to training for workers, the industry will experience skill shortages due to rapid advancement of technology and areas requiring specialised and experienced workers. The mining and minerals processing sector relies on a higher proportion of highly skilled workers than that of low skilled workers, and a lesser amount on middle skill level workers but is experiencing an overall decline in the numbers within the workforce and although there is currently a reliance on highly skilled workers, there are changes occurring within the employment structure.
The major factors contributing to skill shortages appear to be:
· insufficient numbers in training ; low awareness of the sector at both a secondary and tertiary level
· attrition from the ranks of skilled workers
· ageing workforce
· rapid changes in the breadth of the skills required in what is a rapidly changing technological environment
· low level of industry involvement/support due to competitive pressures
· lack of RTO capacity to provide training to fully meet the needs of the industry
· misperception of the working environment in mining, remote locations
· lack of addressing the skills gap within the sector
· lack of access to global skills supply.

Coal Mining Industry

Coal is mined in all Australian States.
In the Eastern States coal is dominant amongst the export industries.. Australia 's high-quality, low sulphur coals attract overseas buyers who are conscious of the need to minimise environmental impacts.
The Australian Coal Association has reported that Australia's black coal exports were worth almost $A43 billion in 2010, second only to iron ore ($A49 billion) as Australia's biggest export earner for that year. Black coal represented 15% of the total value of Australia's exports of goods and services in 2010. This represents 31% of the world total coal exports. Queensland is the major producer of coal. In NSW the major mining activity is black coal. The upper Hunter Valley supplies 80 per cent of New South Wales's coal. A feature of the NSW mining industry is its downstream minerals processing. Coal meets up with iron ore at Port Kembla where it becomes iron and steel at one of the largest metal producing facilities in the country. NSW's coal also supplies the electricity for one of the nation's largest aluminium smelters at Tomago in the Hunter Valley .

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Victoria 's major mineral assets are its reserves of brown coal. The total brown coal economic demonstrated resource is the state's Latrobe Valley is estimated to be 380,000 million tonnes. Power supplies from the Latrobe Valley and Anglesea deposits play a major part in the national mineral industry picture.
Although the demand for most commodities is increasing, global consolidation and fluctuating commodity prices and demand have meant the mining industry has focussed on improving efficiency and safety operations and moved towards increasing diversity and integration worldwide.
Australia 's mineral industries are dealing with new challenges in environmental protection and land rights issues and mining companies have responded positively.

Drilling Industry

Drilling involves the use of heavy machinery to break through the earths surface. It is an essential industry.
Drilling is carried out in every State and Territory of Australia, including the Antarctic, and in the seas surrounding it.
The industry has the following sectors:

- blast hole drilling
- environmental drilling
- foundation/construction drilling (including piling)
- geotechnical drilling
- mineral exploration
- mineral production
- oil, gas and geothermal, off shore
- oil, gas and geothermal, on shore
- raiseboring
- seismic
- trenchless technology (including horizontal directional drilling)
- water well drilling.

The drilling industry has its own identity and supports the activities of a range of other industries.
Drilling results define mineral reserves for future mining prospects, and play a key role in the extraction process. Drillers access ground water supply for commercial, domestic, stock, irrigation or town water supply use. Water well drilling provides water supply for most of rural and regional Australia, and significant urban water (for example, 78% of Perth’s water, and 92% of Darwin’s), a particularly vital issue in Australia, the world’s driest continent.
Drillers carry out site investigation drilling to allow the design of foundations and to ensure the stability of major civil works such as bridges and buildings. Pile driving and extraction plays an important role in irrigation and environment solutions to water conservation and land erosion. Environmental drilling defines areas of suspected contaminated land, the first stage in the remediation process. Drillers help to locate areas of sub-surface contamination and assist in the remediation process.
Drilling defines and accesses vital oil, gas and geothermal power for domestic and commercial uses both nationally and internationally. Trenchless technology/horizontal directional drilling supports the utilities and communications industries, and contributes to the transmission of energy resources.
The majority of drilling contractors work in more than one sector of drilling.
The industry has some salient features which impact strongly on its operations:

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- a high number of employees who have been employed in the industry for many years, but have rarely been employed in one company for a prolonged period;
- a high turnover of employees at individual company level;
- a largely rural/regional work circumstance;
- a very highly mobile workplace (rigs move all the time);
- high plant costs and high consumables costs;
- heavy work and high insurance costs;
- a very high proportion of people who run micro-businesses;
- only recent access to a means of providing national qualifications to personnel
- limited RTO capacity to meet training needs
- regulatory compliance requirements aligned to the national competency framework

Quarrying Industry

Quarries provide earth materials such as civil grade aggregate, dimensional stone, agricultural limestone, sand, gravel, crushed rock and clay that are processed into raw material inputs for buildings and construction, agriculture and industrial processes. Approximately 90% of the output from quarries in Australia is used in the building and construction industries.

The majority of the approximate 2,600 quarries in Australia are located within 100 km of main cities and town centres which assists in minimising the cost of buildings and infrastructure development.

The industry comprises of quarry operators and equipment and service providers. Quarry operators range from large multi-national companies operating throughout Australia's metropolitan and provincial centres to small family owned quarries and municipal quarries serving provincial and rural markets. Over 7,000 personnel are employed within the industry. The majority of quarry operations are small with 10 employees or less at each site. Many quarries operate with two to four staff and employ contractors to provide periodic services such as drilling, blasting and maintenance

Quarrying is a natural resource industry, conducted not in isolation but as part of a chain of inter-connected activities. These extend from the finding and securing of earth resources, to processing and the manufacture and transportation of simple as well as sophisticated construction and building materials, to the interactions and impacts on surrounding communities and ultimately to recycling and post extractive end-uses where old quarries are put to new uses.

Australian companies were amongst the first in the world to identify the inherent value of the integration of quarrying with downstream construction material manufacturing such as pre-mixed concrete and to develop and globally apply business models that could harness such value adding. In the space of several decades Australian quarrying and construction materials companies have forged an international presence and identity to become pre-eminent amongst the world's integrated construction materials companies.

This continual development and export of technical expertise acquired through generations of innovation, hard work and with major contributions from migrants to Australia, is a realisation of the clever country vision. This legacy continues. With origins that pre-date the arrival of Europeans by thousands of years, the Australian quarrying industry continues to create rock products that enhance the quality of life for our communities

Civil Construction Industry

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The Civil Construction industry plays a large part in Australia's economic life; it is an integral component in the infrastructure essential for our day to day living. Those working in the industry are primarily engaged in civil engineering work on infrastructure-related projects covering such diverse fields as roads, subdivisions, bridgeworks, railways, harbours, sewerage and drainage, electrical infrastructure, pipelines and recreation works.
Civil construction is the most significant participant in the built environment active across a range of sectors - the commercial sector, as well as Local and State Government. It is also associated with industries such as mining.
Governments are committing substantial funds to building civil infrastructure such as roads, ports, bridges and rail, as well as opening up new sub-divisions and maintaining existing structures. Infrastructure is also a key component of the productivity agenda and will be a critical part of providing for population projections that have Australia as home to 35 million people by 2050.
While there are no detailed figures available in relation to the size of the civil construction workforce as a separate and discrete workforce, the data obtained through a workforce analysis conducted by the Civil Contractors Federation, indicates that the size of the workforce is approximately 350,000 with occupations including design and supervisory positions, plant operations and other technical and support roles. On very conservative estimates this suggests that civil construction makes up 30% to 40% or more of the building and construction workforce.
Key areas of operation include bridge construction, road construction, pipe laying, tunnel construction and the occupation of plant operators across all areas of activity. Additionally, plant hire and civil engineering project management are significant areas of activity.
Buoyant activity and strong investment in the industry drives continued employment growth. A significant factor in this is the fact that approximately 94% of enterprises operating in the Civil Construction sector employ 5 or fewer employees. The CCF occupation review reported that 30% of the industry had major difficulty recruiting labour and sourcing sub-contractors; therefore recruitment of qualified labour (including professional and supervisory staff) remains the dominant supply constraint for the industry.
There are significant changes in industry technology contributing to significant enhancement of existing practices and operations, or diversification of work organisation models (for example, via multifunctional plant and equipment requiring new and effective work models).
Work demands on this vital industry sector will continue to grow as outsourcing of government activities related to Civil Construction continue to increase.

Preliminary Information

Important Note to Users
Training Packages are not static documents; they are amended periodically to reflect the latest industry practices and are version controlled. It is essential that the latest version is always used.
Check the version number before commencing training or assessment
This Training Package is Version 3.0 - check whether this is the latest version by going to the national training information service (www.training.gov.au) and locating information about the Training Package. Alternatively, contact SkillsDMC (Resources and Infrastructure Industry Skills Council) at http://www.skillsdmc.com.au to confirm the latest version number.
Explanation of version number conventions

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The primary release Training Package is Version 1. When changes are made to a Training Package, sometimes the version number is changed and sometimes it is not, depending on the extent of the change. When a Training Package is reviewed it is considered to be a new Training Package for the purposes of version control, and is Version 1. Do not confuse the version number with the Training Packages national code (which remains the same during its period of endorsement).

Explanation of the review date

The review date (shown on the title page and in the header of each page) indicates when the Training Package is expected to be reviewed in the light of changes such as changing technologies and circumstances. The review date is not an expiry date. Endorsed Training Packages and their components remain current until they are reviewed or replaced.

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Training Package Name:	Resources and Infrastructure Industry Training Package
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ISC Website URL:	www.skillsdmc.com.au

Training Package Volume Number	**Training Package Volume Name**
1	Introduction
2	General Fields of Competence Applicable to All Sectors
3	Technical Fields of Competence Applicable to All Sectors
4	Technical Fields of Competence Applicable to Some Sectors
5	Technical Fields of Competence Applicable to a Single Sector (Civil Construction and Coal Mining)

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Training Package Volume Number	Training Package Volume Name
6	Technical Fields of Competence Applicable to a Single Sector (Metalliferous Mining and Drilling)

History

This training package is the result of the rationalisation and consolidation of five Resources and Infrastructure Training Packages: RII06 Civil Construction Training Package, V1, release date 14 July 2006; MNQ03 Extractive Industries Training Package, V1.1, release date 18 January 2008; MNM05 Metalliferous Mining Training Package, Version 1.1, release date 6 April 2007; DRT03 Drilling Training Package, Version 2, release date 25 May 2007; MNC04 Coal Training Package, version 2, release date 16 January 2008; BCC03 Civil Construction Training Package, version 3, release date 07 September 2007.

This RII09 Resources and Infrastructure Industry Training Package covers Skill Sets and AQF level qualifications at Certificate I, Certificate II, Certificate III, Certificate IV, Diploma and Advanced Diploma.

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Mapping to Previous Training Package

Mapping to Previous Version of the Training Package

Mapping of RII09 Version 2.0 Training Package to RII09 Version 3.0 Training Package	
Equivalence Code	***EQU = Equivalent***
	NEW = New to meet industry need
	NEQ = Not equivalent but similar outcomes
	NC = No change

Version 2.0 – Skill Sets	***Version 3.0 – Skill Sets***	***Equivalence***
Skill Set Mine Surveying	Skill Set Mine Surveying	NC
Skill Set Leading Hand	Skill Set Leading Hand	NC
Skill Set Rouseabout Off Shore Oil and Gas	Skill Set Rouseabout Off Shore Oil and Gas	NC
Skill Set Site Health and Safety Coordinator	Skill Set Site Health and Safety Coordinator	NC
Skill Set Surface Shotfiring	Skill Set Surface Shotfiring	NC
Skill Set Underground Shotfiring – Coal	Skill Set Underground Shotfiring – Coal	NC
Skill Set Underground Shotfiring – Metalliferous	Skill Set Underground Shotfiring – Metalliferous	NC
Skill Set Supervision of Indigenous Employees	Skill Set Supervision of Indigenous Employees	NC
	Skill Set Explosion Protected Diesel Engine Systems Maintenance	NEW
	Skill Set Work Zone Traffic Control – Road Labourer	NEW

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	Skill Set Work Zone Traffic Control – Traffic Controller	NEW
	Skill Set Work Zone Traffic Control – Implement Traffic Control Guidance Plan	NEW
	Skill Set Work Zone Traffic Control – Supervisor	NEW
	Skill Set Work Zone Traffic Control Guidance Plan – Developer	NEW
	Skill Set Work Zone Traffic Control – Auditor / Inspector	NEW
	Skill Set Surface Coal Mine Safety	NEW
	Skill Set Underground Coal Mine Safety	NEW
Version 2.0 – Qualifications	***Version 3.0 – Qualifications***	***Equivalence***
Certificate I Qualifications		
RII10109 Certificate I in Resources and Infrastructure Operations	RII10109 Certificate I in Resources and Infrastructure Operations	NC
Certificate II Qualifications		
RII20109 Certificate II in Resources and Infrastructure Work Preparation	RII20109 Certificate II in Resources and Infrastructure Work Preparation	NC
RII20209 Certificate II in Surface Extraction Operations	RII20209 Certificate II in Surface Extraction Operations	NC

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RII20309 Certificate II in Underground Coal Mining	RII20309 Certificate II in Underground Coal Mining	NC
RII20409 Certificate II in Underground Metalliferous Mining	RII20409 Certificate II in Underground Metalliferous Mining	NC
RII20509 Certificate II in Resource Processing	RII20509 Certificate II in Resource Processing	NC
RII20609 Certificate II in Mining Field/Exploration Operations	RII20609 Certificate II in Mining Field/Exploration Operations	NC
RII20709 Certificate II in Civil Construction	RII20712 Certificate II in Civil Construction	NC
RII20809 Certificate II in Bituminous Surfacing	RII20809 Certificate II in Bituminous Surfacing	NC
RII20909 Certificate II in Drilling Operations	RII20909 Certificate II in Drilling Operations	NC
RII21009 Certificate II in Drilling Oil/Gas (Off shore)	RII21009 Certificate II in Drilling Oil/Gas (Off shore)	NC
RII21109 Certificate II in Drilling Oil/Gas (On shore)	RII21109 Certificate II in Drilling Oil/Gas (On shore)	NC
Certificate III Qualifications		
RII30111 Certificate III in Surface Extraction Operations	RII30112 Certificate III in Surface Extraction Operations	EQU
RII30209 Certificate III in Underground Coal Operations	RII30212 Certificate III in Underground Coal Operations	EQU
RII30311 Certificate III in Underground Metalliferous Mining	RII30311 Certificate III in Underground Metalliferous Mining	NC
RII30411 Certificate III in Resource Processing	RII30411 Certificate III in Resource Processing	NC

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RII30509 Certificate III in Mining Exploration		RII30509 Certificate III in Mining Exploration			NC
RII30611 Certificate III in Small Mining Operations		RII30611 Certificate III in Small Mining Operations			NC
RII30709 Certificate III in Mine Emergency Response and Rescue		RII30709 Certificate III in Mine Emergency Response and Rescue			NC
RII30809 Certificate III in Civil Construction Plant Operations		RII30809 Certificate III in Civil Construction Plant Operations			NC
RII30909 Certificate III in Civil Construction		RII30912 Certificate III in Civil Construction			EQU
RII31009 Certificate III in Bituminous Surfacing		RII31009 Certificate III in Bituminous Surfacing			NC
RII31109 Certificate III in Bridge Construction and Maintenance		RII31109 Certificate III in Bridge Construction and Maintenance			NC
RII31209 Certificate III in Civil Foundations		RII31209 Certificate III in Civil Foundations			NC
RII31309 Certificate III in Pipe Laying		RII31309 Certificate III in Pipe Laying			NC
RII31409 Certificate III in Road Construction and Maintenance		RII31409 Certificate III in Road Construction and Maintenance			NC
RII31509 Certificate III in Road Marking		RII31509 Certificate III in Road Marking			NC
RII31609 Certificate III in Trenchless Technology		RII31609 Certificate III in Trenchless Technology			NC
RII31709 Certificate III in Tunnel Construction		RII31709 Certificate III in Tunnel Construction			NC
RII31809 Certificate III in Drilling Operations		RII31809 Certificate III in Drilling Operations			NC

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RII31909 Certificate III in Drilling Oil/Gas (Off shore)	RII31909 Certificate III in Drilling Oil/Gas (Off shore)	NC
RII32009 Certificate III in Drilling Oil/Gas (On shore)	RII32009 Certificate III in Drilling Oil/Gas (On shore)	NC
RII32109 Certificate III in Timber Bridge Construction and Maintenance	RII32109 Certificate III in Timber Bridge Construction and Maintenance	NC
Certificate IV Qualifications		
RII40109 Certificate IV in Surface Extraction Operations	RII40109 Certificate IV in Surface Extraction Operations	NC
RII40209 Certificate IV in Surface Coal Mining (Open Cut Examiner)	RII40212 Certificate IV in Surface Coal Mining (Open Cut Examiner)	EQU
RII40311 Certificate IV in Metalliferous Mining Operations (Underground)	RII40311 Certificate IV in Metalliferous Mining Operations (Underground)	NC
RII40411 Certificate IV in Underground Coal Operations	RII40412 Certificate IV in Underground Coal Operations	EQU
RII40509 Certificate IV in Resource Processing	RII40509 Certificate IV in Resource Processing	NC
RII40609 Certificate IV in Civil Construction Operations	RII40609 Certificate IV in Civil Construction Operations	NC
RII40709 Certificate IV in Civil Construction Supervision	RII40712 Certificate IV in Civil Construction Supervision	EQU
RII40809 Certificate IV in Civil Construction Design	RII40809 Certificate IV in Civil Construction Design	NC
RII40909 Certificate IV in Drilling Operations	RII40909 Certificate IV in Drilling Operations	NC
RII41009 Certificate IV in Drilling Oil/Gas (Off shore)	RII41009 Certificate IV in Drilling Oil/Gas (Off shore)	NC

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RII41109 Certificate IV in Drilling Oil/Gas (On shore)	RII41109 Certificate IV in Drilling Oil/Gas (On shore)	NC
Diploma Qualifications		
RII50109 Diploma of Surface Operations Management	RII50109 Diploma of Surface Operations Management	NC
RII50209 Diploma of Underground Metalliferous Mining Management	RII50209 Diploma of Underground Metalliferous Mining Management	NC
RII50309 Diploma of Minerals Processing	RII50309 Diploma of Minerals Processing	NC
RII50409 Diploma of Civil Construction Management	RII50409 Diploma of Civil Construction Management	NC
RII50509 Diploma of Civil Construction Design	RII50509 Diploma of Civil Construction Design	NC
RII50609 Diploma of Drilling Operations	RII50609 Diploma of Drilling Operations	NC
RII50709 Diploma of Drilling Oil/Gas (Off shore)	RII50709 Diploma of Drilling Oil/Gas (Off shore)	NC
RII50809 Diploma of Drilling Oil/Gas (On shore)	RII50809 Diploma of Drilling Oil/Gas (On shore)	NC
RII50909 Diploma of Underground Coal Mining Management	RII50912 Diploma of Underground Coal Mining Management	EQU
Advance Diploma Qualifications		
RII60109 Advanced Diploma of Metalliferous Mining	RII60109 Advanced Diploma of Metalliferous Mining	NC
RII60209 Advanced Diploma of Extractive Industries Management	RII60209 Advanced Diploma of Extractive Industries Management	NC

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Mapping to Previous Version of the Training Package

RII60309 Advanced Diploma of Underground Coal Mining Management	RII60312 Advanced Diploma of Underground Coal Mining Management	EQU
RII60409 Advanced Diploma of Drilling Management	RII60409 Advanced Diploma of Drilling Management	NC
RII60509 Advanced Diploma of Civil Construction Design	RII60509 Advanced Diploma of Civil Construction Design	NC
RII60609 Advanced Diploma of Civil Construction	RII60609 Advanced Diploma of Civil Construction	NC
RII60709 Advanced Diploma of Surface Coal Mining Management	RII60709 Advanced Diploma of Surface Coal Mining Management	NC

Mapping of RII09 Version 2.0 Units of Competency to RII09 Version 3.0 Units of Competency

Note: This table only includes units where there has been a change between Versions 2.0 and 3.0

Equivalence Code	***EQU = Equivalent***
	NEW = New to meet industry need
	NEQ = Not equivalent but similar outcomes
	IMP = ***Imported*** unit updated from originating TP

Version 2.0 Unit Code	***Version 2.0 Unit Title***	***Version 3.0 Unit Code***	***Version 3.0 Unit Title***	***Equivalence***
1. General Fields of Competence Applicable to All Sectors				
1.1 Risk Management – RIIRIS				

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Mapping to Previous Version of the Training Package

RIIRIS301A	Apply risk management processes	RIIRIS301B	Apply risk management processes	EQU
1.3 Occupational Health and Safety – RIIOHS				
MSAPMPER300B	Issue work permits	MSAPMPER300	Issue work permits	IMP
1.8 Business Effectiveness – RIIBEF				
BSBWOR404A	Develop work priorities	BSBWOR404B	Develop work priorities	IMP
1.10 Information Management – RIIIMG				
TLIA907E	Complete and check import/export documentation	TLID2022A	Complete and check import/export documentation	IMP
1.13 Training and Assessment				
TAAASS301B	Contribute to assessment	TAEASS301B	Contribute to assessment	IMP
TAAASS402C	Assess competence	TAEASS402B	Assess competence	IMP
TAAASS404B	Participate in assessment validation	TAEASS403B	Participate in assessment validation	IMP
TAADEL301C	Provide training through instruction and demonstration of work skills	TAEDEL301A	Provide work skill instruction	IMP
2. Technical Fields of Competence Applicable to All Sectors				
2.1 Blast Hole Drilling – RIIBHD				
RIIBHD304A	Set up and prepare for open cut drilling	RIIBHD304B	Set up and prepare for open cut	EQU

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Mapping to Previous Version of the Training Package

	operations		drilling operations	
		RIIBHD305	Conduct down-hole hammer drilling	NEW
2.2 Blasting – RIIBLA				
RIIBLA203A	Conduct mobile mixing of explosives	RIIBLA203B	Conduct mobile mixing of explosives	EQU
2.3 Service and Maintenance – RIISAM				
RIISAM203A	Use hand and power tools	RIISAM203B	Use hand and power tools	EQU
RIISAM204A	Operate small plant and equipment	RIISAM204B	Operate small plant and equipment	EQU
RIISAM206A	Operate equipment services vehicle underground	RIIVEH203A	Operate a light vehicle underground	EQU
2.4 Load Handling – RIIHAN				
TLID2207C	Conduct weighbridge operations	RLID2022A	Conduct weighbridge operations	IMP
2.5 Vehicle Operations – RIIVEH				
RIIVEH203A	Operate light vehicle underground	RIIVEH203B	Operate light vehicle underground	EQU
RIIVEH304A	Conduct tip truck operations	RIIVEH304B	Conduct tip truck operations	EQU
2.6 Sampling, Testing & Data Processing & Recording – RIISTD				
PMLDATA400A	Process and interpret data	MSL924001A	Process and interpret data	IMP

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PMLDATA500B	Analyse data and report results	MSL925001A	Analyse data and report results		IMP
PMLORG600B	Supervise laboratory operations in work/functional area	MSL916003A	Supervise laboratory operations in work/functional area		IMP
PMLTEST303B	Prepare working solutions	MSL973002A	Prepare working solution		IMP
PMLTEST402B	Prepare standardise and use solutions	MSL974001A	Prepare standardise and use solutions		IMP
PMLTEST404A	Perform chemical tests and procedures	MSL974003A	Perform chemical tests and procedures		IMP
PMLTEST406A	Perform physical tests	MSL974001A	Prepare standardise and use solutions		IMP
PMLTEST411A	Perform mechanical tests	MSL974010A	Perform mechanical tests		IMP
PMLSAMP302A	Receive and prepare samples for testing	MSL953001A	Receive and prepare samples for testing		IMP
PMLTEST300B	Perform basic tests	MSL973001A	Perform basic tests		IMP
PMLTEST307B	Prepare trial batches for evaluation	MSL973006A	Prepare trial batches for evaluation		IMP
PMLTEST511B	Supervise earthworks inspection, sampling and testing operations	MSL975007A	Supervise sampling, inspections and testing at construction sites		IMP

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PMLTEST520A	Perform complex tests to measure engineering properties of materials	MSL975016A	Perform complex tests to measure engineering properties of materials	IMP
2.7 Emergency Response & Rescue – RIIERR				
PUASAR002B	Undertake road accident rescue	PUASAR024A	Undertake road crash rescue	IMP
PUASAR004B	Undertake vertical rescue	PUASAR032A	Undertake vertical rescue	IMP
PUASAR005B	Undertake confined space rescue	PUASAR025A	Undertake confined space rescue	IMP
PUASAR008B	Search as a member of a land search team	PUASAR027A	Search as a member of a land search team	IMP
RIIERR203A	Escape from hazardous situation unaided	RIERR203B	Escape from hazardous situation unaided	IMP
3. Technical Fields of Competence Applicable to Some Sectors (2 to 4 Sectors)				
3.3 Mobile Plant Operations – RIIMPO				
RIIMPO205A	Operate roller / compactor	RIIMPO205B	Operate roller / compactor	EQU
RIIMPO206A	Conduct bulk water truck operations	RIIMPO206B	Conduct bulk water truck operations	EQU
RIIMPO209A	Conduct underground load, haul, dump truck operations	RIIMPO333	Conduct underground load, haul and dump truck operations	EQU

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RIIMPO301B	Conduct hydraulic excavator operations	RIIMPO301C	Conduct hydraulic excavator operations	EQU
RIIMPO307A	Conduct wheeled grader operations in underground mines	RIIMPO307B	Conduct wheeled grader operations in underground mines	EQU
RIIMPO310A	Conduct grader operations	RIIMPO310B	Conduct grader operations	EQU
RIIMPO320A	Conduct civil construction excavator operations	RIIMPO320B	Conduct civil construction excavator operations	EQU
3.4 Processing (General) – RIIPRO				
RIIPRO301B	Conduct crushing and screening operations	RIIPRO301C	Conduct crushing and screening operations	EQU
3.5 Plant and Equipment Operations – RIIPEO				
		RIIPEO302	Operate and monitor ore car dumpers	NEW
3.6 Conservation and Rehabilitation – RIICAR				
RTD2022A	Carry out natural restoration works	AHCNAR201A	Carry out natural area restoration works	IMP
RTD2202A	Conduct erosion and sediment control activities	AHCSAW201A	Conduct erosion and sediment control activities	IMP
RTD3032A	Implement	AHCSAW301A	Implement	IMP

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Mapping to Previous Version of the Training Package

	revegetation works		revegetation works	
RTD3205A	Construct conservation earthworks	AHCSAW301A	Construct conservation earthworks	IMP
3.8 Waste and By-products – RIIWBP				
RIIWBP203A	Monitor tailings dam environment	RIIWBP203B	Monitor tailings dam environment	EQU
3.11 Underground Mining – RIIUND				
RIIUND203A	Apply shot-crete	RIIUND203B	Apply shot-crete	EQU
4. Technical Fields of Competence Applicable to a Single Sector				
4.1.1 Civil Works Design				
RIICWD524A	Prepare design of sprayed seal surfacing	RIICWD524B	Prepare design of sprayed seal surfacing	EQU
RIICWD525A	Select pavement surfacing	RIICWD525B	Select pavement surfacing	EQU
4.1.2 Civil Works (Management and Supervision) – RIICWM				
RIICWM401A	Supervise civil works	RIICWM401B	Supervise civil works	
4.1.3 Civil Works (Common Units) – RIICCM				
FPICOT2221A	Trim and cross cut felled trees	FPICOT221B	Trim and cross cut felled trees	IMP
4.1.4 Road and Pavements Construction and Maintenance (General) – RIICRC				
		RIICRC311	Conduct concrete road paver operations	NEW
		RIICRC312	Setup and maintain	NEW

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			concrete paver stringlines		
		RIICRC313	Conduct concrete road curing and texturing operations		NEW
		RIICRC314	Handle concrete materials		NEW
		RIICRC315	Use concreting materials and equipment		NEW
		RIICRC316	Place and compact concrete		NEW
		RIICRC317	Finish concrete pavements		NEW
		RIICRC318	Cure concrete		NEW
		RIICRC319	Saw and cut concrete pavements to initiate planned cracks		NEW
		RIICRC320	Seal concrete pavements		NEW
		RIICRC321	Use automated paving guidance systems		NEW
		RIICRC322	Receive, check and record concrete deliveries		NEW
		RIICRC323	Insert tie bars in fresh concrete		NEW

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RIICRC406a	Apply the principles of pavement maintenance	RIICRC406B	Apply the principles of pavement maintenance	EQU
4.1.5 Bituminous Surfacing – RIICBS				
RIICBS401A	Apply the principles of asphalt paving and compaction	RIICBS401B	Apply the principles of asphalt paving and compaction	EQU
RIICBS402A	Apply the principles for the application of bituminous sprayed treatment	RIICBS402B	Apply the principles for the application of bituminous sprayed treatment	EQU
RIICBS403A	Apply the principles for the polymer modified binder	RIICBS403B	Apply the principles for the polymer modified binder	EQU
RIICBS404A	Apply principles for the selection and use of bituminous emulsion	RIICBS404B	Apply principles for the selection and use of bituminous emulsion	EQU
4.2.6 Coal Mining (Diesel Engine Systems Maintenance) – RIIDES				
		RIIDES301	Inspect, test and maintain diesel engine systems and their ancillary systems	NEW
		RIIDES302	Inspect, test and maintain joints on diesel engine systems	NEW
		RIIDES303	Inspect, test and maintain	NEW

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Mapping to Previous Version of the Training Package

			cooling systems on diesel engine systems	
		RIIDES304	Inspect, test and maintain inlet systems on diesel engine systems	NEW
		RIIDES305	Inspect, test and maintain exhaust systems on diesel engine systems	NEW
		RIIDES306	Inspect, test and maintain safety shutdown systems on diesel engine systems	NEW
		RIIDES307	Test, determine the cause and rectify excessive emission levels on diesel engine systems	NEW
4.3.3 Exploration and Field Work – RIIEGS				
RIIEGS305A	Navigate in remote and trackless areas	RIIEGS305B	Navigate in remote or trackless areas	EQU
		RIIVEH307A	Operate heavy rigid vehicle	NEW
4.3.4 Processing General – RIIPBP, RIIPGP, RIIPHA & RIIMPG				
FPPSTM1A	Manage steam boiler start-up	FPPSTM320A	Manage steam boiler startup	IMP
FPPSTM3A	Shut down and store steam	FPPSTM330A	Shut down and	IMP

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Mapping to Previous Version of the Training Package

	boiler		bank steam	
4.4.1 Drilling (General) – RIINHB				
RIINHB210A	Assist surface directional drilling	RIINHB210B	Assist surface directional drilling	EQU
RIINHB324A	Conduct grouting or cementing operations	RIINHB324B	Carry out grouting or cementing operations	EQU
4.4.2 Drilling (Oil & Gas) – RIIOGD, RIIOGF, RIIOGN				
RIIOGN301A	Prepare and operate drilling fluid systems	RIIOGD203A	Prepare and operate drilling fluid systems	EQU

Employability Skills

Employability skills are detailed in each qualification. Employability skills are to be demonstrated in the context of the conduct of the activities outlined in the units of competency being assessed.

Unit component	**Example of embedded Employability Skill**
Unit Title	RIIMEX201A Suppress dust in open cut environment
Unit Descriptor	This unit covers suppressing of dust in an open cut environment in the coal and metalliferous mining and extractive industries. It includes applying dust suppressant and minimising dust creation

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Unit component	Example of embedded Employability Skill
Element	1) Apply dust suppressant
Performance Criteria	1.1 Access, interpret and apply compliance documentation relevant to suppressing of dust in an open cut environment 1.2 Receive, interpret and clarify shift changeover details 1.3 Select appropriate dust suppression method according to site conditions 1.4 Distribute dust suppressant in appropriate pattern according to road type 1.5 Adjust dust suppression activities according to schedule and weather conditions 1.6 Identify, address and report environmental issues 1.7 Communicate with other personnel using approved communication methods 1.8 Adhere to emergency procedures to ensure safety of personnel, plant and equipment
Range Statement	**Relevant compliance documentation** may include: • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Required Skills and Knowledge	**Required Skills** Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to suppress dust in open cut environment: • apply legislative, organisation and site requirements and procedures • make decisions • direct and signal • clean equipment • maintain equipment

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Unit component	Example of embedded Employability Skill
	• operate equipment • follow instructions • identify hazards • interpret plans, reports, maps, specifications • maintain records • follow safe work practices • troubleshoot • wear protective equipment **Required Knowledge** Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to suppress dust in open cut environment: • emergency procedures • environmental aspects • equipment processes, technical capability and limitations • equipment safety requirements • geological and technical data (rock formation) • maintenance procedures • mine operation system • OHS procedures • plan terminology • site procedures (operational and maintenance) • site safety requirements • sprinkler operation • water truck operation
Evidence Guide	**Critical aspects for assessment and evidence required to demonstrate competency in this unit** The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for suppressing of dust in open cut environment

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Unit component	Example of embedded Employability Skill
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the suppressing of dust in open cut environment • working with others to suppress dust in open cut environment that meets all of the required outcomes • consistent timely suppressing of dust in open cut environment that safely, effectively and efficiently meets the required outcomes

Qualifications Pathways

The following pathways charts are provided to show the types of pathways into and from qualifications that are possible with this Training Package.
For more information about qualifications and pathways contact SkillsDMC (Resources and Infrastructure Industry Skills Council) (http://www.skillsdmc.com.au).

Skill Sets in this Training Package

Definition
Skill sets are defined as single units of competency, or combinations of units of competency from an endorsed Training Package, which link to a licence or regulatory requirement, or defined industry need.
Wording on Statements of Attainment
Skill sets are a way of publicly identifying logical groupings of units of competency which meet an identified need or industry outcome. Skill sets are not qualifications.
Where skill sets are identified in a Training Package, the Statement of Attainment can set out the competencies a person has achieved in a way that is consistent and clear for employers and others. This is done by including the wording "these competencies meet [insert skill set title or identified industry area] need" on the Statement of Attainment. This wording applies only to skill sets that are formally identified as such in the endorsed Training Package. See the 2010 edition of the AQF Implementation Handbook for advice on wording on Statements of Attainment. http://www.aqf.edu.au/Portals/0/Documents/Handbook/AQF_Handbook_07.pdf

Skill Set Leading Hand
Skill Set Rouseabout Off Shore Oil and Gas
Skill Set Site Health and Safety Coordinator
Skill Set Mine Surveying
Skill Set Surface Shotfiring

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Skill Set Underground Shotfiring – Coal
Skill Set Underground Shotfiring – Metalliferous
Skill Set Supervision of Indigenous Employees
Skill Set Explosion Protected Diesel Engine Systems Maintenance
Skill Set Work Zone Traffic Control – Road Labourer
Skill Set Work Zone Traffic Control – Traffic Controller
Skill Set Work Zone Traffic Control – Implement Traffic Control Guidance Plan
Skill Set Work Zone Traffic Control – Supervisor
Skill Set Work Zone Traffic Control Guidance Plan – Developer
Skill Set Work Zone Traffic Control – Auditor / Inspector
Skill Set Surface Coal Mine Safety
Skill Set Underground Coal Mine Safety

Summary of AQF Qualifications in this Training Package

Qualification Code	Title
RII10109	Certificate I in Resources and Infrastructure Operations
RII20109	Certificate II in Resources and Infrastructure Work Preparation
RII20209	Certificate II in Surface Extraction Operations
RII20309	Certificate II in Underground Coal Mining
RII20409	Certificate II in Underground Metalliferous Mining
RII20509	Certificate II in Resource Processing
RII20609	Certificate II in Mining/Field Exploration Operations
RII20712	Certificate II in Civil Construction
RII20809	Certificate II in Bituminous Surfacing

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Qualification Code	Title
RII10109	Certificate I in Resources and Infrastructure Operations
RII20109	Certificate II in Resources and Infrastructure Work Preparation
RII20909	Certificate II in Drilling Operations
RII21009	Certificate II in Drilling Oil/Gas (Off shore)
RII21109	Certificate II in Drilling Oil/Gas (On shore)
RII30112	Certificate III in Surface Extraction Operations
RII30212	Certificate III in Underground Coal Operations
RII30311	Certificate III in Underground Metalliferous Mining
RII30411	Certificate III in Resource Processing
RII30509	Certificate III in Mining Exploration
RII30611	Certificate III in Small Mining Operations
RII30709	Certificate III in Mine Emergency Response and Rescue
RII30809	Certificate III in Civil Construction Plant Operations
RII30912	Certificate III in Civil Construction
RII31209	Certificate III in Civil Foundations
RII31609	Certificate III in Trenchless Technology
RII31809	Certificate III in Drilling Operations
RII31909	Certificate III in Drilling Oil/Gas (Off shore)
RII32009	Certificate III in Drilling Oil/Gas (On shore)
RII40109	Certificate IV in Surface Extraction Operations
RII40212	Certificate IV in Surface Coal Mining (Open Cut Examiner)
RII40311	Certificate IV in Metalliferous Mining Operations (Underground)
RII40412	Certificate IV in Underground Coal Operations

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Qualification Code	Title
RII10109	Certificate I in Resources and Infrastructure Operations
RII20109	Certificate II in Resources and Infrastructure Work Preparation
RII40509	Certificate IV in Resource Processing
RII40609	Certificate IV in Civil Construction Operations
RII40712	Certificate IV in Civil Construction Supervision
RII40809	Certificate IV in Civil Construction Design
RII40909	Certificate IV in Drilling Operations
RII41009	Certificate IV in Drilling Oil/Gas (Off shore)
RII41109	Certificate IV in Drilling Oil/Gas (On shore)
RII50109	Diploma of Surface Operation Management
RII50209	Diploma of Underground Metalliferous Mining Management
RII50309	Diploma of Minerals Processing
RII50409	Diploma of Civil Construction Management
RII50509	Diploma of Civil Construction Design
RII50609	Diploma of Drilling Operations
RII50709	Diploma of Drilling Oil/Gas (Off shore)
RII50809	Diploma of Drilling Oil/Gas (On shore)
RII50912	Diploma of Underground Coal Mining Management
RII60109	Advanced Diploma of Metalliferous Mining
RII60209	Advanced Diploma of Extractive Industries Management
RII60312	Advanced Diploma of Underground Coal Mining Management
RII60409	Advanced Diploma of Drilling Management
RII60509	Advanced Diploma of Civil Construction Design

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Qualification Code	Title
RII10109	Certificate I in Resources and Infrastructure Operations
RII20109	Certificate II in Resources and Infrastructure Work Preparation
RII60609	Advanced Diploma of Civil Construction
RII60709	Advanced Diploma of Surface Coal Mining Management

Overview

What is a Training Package?
A Training Package is an integrated set of nationally endorsed competency standards, assessment guidelines and Australian Qualifications Framework (AQF) qualifications for a specific industry, industry sector or enterprise.
Each Training Package:
- provides a consistent and reliable set of components for training, recognising and assessing peoples skills, and may also have optional support materials
- enables nationally recognised qualifications to be awarded through direct assessment of workplace competencies
- encourages the development and delivery of flexible training which suits individual and industry requirements
- encourages learning and assessment in a work-related environment which leads to verifiable workplace outcomes.

How do Training Packages fit within the National Skills Framework?
The National Skills Framework applies nationally, is endorsed by the Ministerial Council for Vocational and Technical Education, and comprises the Australian Quality Training Framework 2010 (AQTF 2010), and Training Packages endorsed by the National Quality Council (NQC).

How are Training Packages developed?
Training Packages are developed by Industry Skills Councils or enterprises to meet the identified training needs of specific industries or industry sectors. To gain national endorsement of Training Packages, developers must provide evidence of extensive research, consultation and support within the industry area or enterprise.

How do Training Packages encourage flexibility?
Training Packages describe the skills and knowledge needed to perform effectively in the workplace without prescribing how people should be trained. Training Packages acknowledge that people can achieve vocational competency in many ways by emphasising what the learner can do, not how or where they learned to do it. For example, some experienced workers might be able to demonstrate competency against the units of competency, and even gain a qualification, without completing a formal training program.
With Training Packages, assessment and training may be conducted at the workplace, off-the-job, at a training organisation, during regular work, or through work experience, work placement, work simulation or any combination of these.

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Who can deliver and assess using Training Packages?
Training and assessment using Training Packages must be conducted by a Registered Training Organisation (RTO) that has the qualifications or specific units of competency on its scope of registration, or that works in partnership with another RTO, as specified in the AQTF 2010.

Training Package Components
Training Packages are made up of mandatory components endorsed by the NQC, and optional support materials.

Training Package Endorsed Components
The nationally endorsed components include the Competency Standards, Assessment Guidelines and Qualifications Framework. These form the basis of training and assessment in the Training Package and, as such, they must be used.

Competency Standards
Each unit of competency identifies a discrete workplace requirement and includes the knowledge and skills that underpin competency as well as language, literacy and numeracy; and occupational health and safety requirements. The units of competency must be adhered to in training and assessment to ensure consistency of outcomes.

Assessment Guidelines
The Assessment Guidelines provide an industry framework to ensure all assessments meet industry needs and nationally agreed standards as expressed in the Training Package and the AQTF 2010. The Assessment Guidelines must be followed to ensure the integrity of assessment leading to nationally recognised qualifications.

Qualifications Framework
Each Training Package provides details of those units of competency that must be achieved to award AQF qualifications. The rules around which units of competency can be combined to make up a valid AQF qualification in the Training Package are referred to as the "packaging rules". The packaging rules must be followed to ensure the integrity of nationally recognised qualifications issued.

Training Package Support Materials
The endorsed components of Training Packages are complemented and supported by optional support materials that provide for choice in the design of training and assessment to meet the needs of industry and learners.
Training Package support materials can relate to single or multiple units of competency, an industry sector, a qualification or the whole Training Package. They tend to fall into one or more of the categories illustrated below.

Training Package support materials are produced "by a range of stakeholders such as RTOs, individual trainers and assessors, private and commercial developers and Government agencies.
Where such materials have been quality assured through a process of "noting" by the NQC, they display the following official logo. Noted support materials are listed on the National Training Information Service (NTIS), together with a detailed description and information on the type of product and its availability < www.ntis.gov.au>.

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It is not compulsory to submit support materials for noting; any resources that meet the requirements of the Training Package can be used.

Training Package, Qualification and Unit of Competency Codes

There are agreed conventions for the national codes used for Training Packages and their components. Always use the correct codes, exactly as they appear in the Training Package, **and with the code always before the title**.

Training Package Codes

Each Training Package has a unique five-character national code assigned when the Training Package is endorsed, for example RII09. The first three characters are letters identifying the Training Package industry coverage and the last two characters are numbers identifying the year of endorsement.

Qualification Codes

Within each Training Package, each qualification has a unique eight-character code, for example RII10109. Qualification codes are developed as follows:

- the first three letters identify the Training Package;
- the first number identifies the qualification level (noting that, in the qualification titles themselves, arabic numbers are **not** used);
- the next two numbers identify the position in the sequence of the qualification at that level; and
- the last two numbers identify the year in which the qualification was endorsed. (Where qualifications are added after the initial Training Package endorsement, the last two numbers may differ from other Training Package qualifications as they identify the year in which those particular qualifications were endorsed.)

Unit of Competency Codes

Within each Training Package, each unit of competency has a unique code. Unit of competency codes are assigned when the Training Package is endorsed, or when new units of competency are added to an existing endorsed Training Package. Unit codes are developed as follows:

- a typical code is made up of 12 characters, normally a mixture of uppercase letters and numbers, as in RIIBEF202A;
- the first three characters signify the Training Package - RII09 - in the above example and up to eight characters, relating to an industry sector, function or skill area, follow;
- the last character is always a letter and identifies the unit of competency version. An "A" at the end of the code indicates that this is the original unit of competency. "B", or another incremented version identifier means that minor changes have been made. Typically this would mean that wording has changed in the range statement or evidence guide, providing clearer intent; and
- where changes are made that alter the outcome, a new code is assigned and the title is changed.

Training Package, Qualification and Unit of Competency Titles

There are agreed conventions for titling Training Packages and their components. Always use the correct titles, exactly as they appear in the Training Package, and with the code always placed before the title.

Training Package Titles

The title of each endorsed Training Package is unique and relates the Training Packages broad industry coverage.

Qualification Titles

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The title of each endorsed Training Package qualification is unique. Qualification titles use the following sequence:

- first, the qualification is identified as either Certificate I, Certificate II, Certificate III, Certificate IV, Diploma, Advanced Diploma, Vocational Graduate Certificate, or Vocational Graduate Diploma;
- this is followed by the words "in" for Certificates I to IV, and "of" for Diploma, Advanced Diploma, Vocational Graduate Certificate and Vocational Graduate Diploma;
- then, the industry descriptor, for example Telecommunications; and
- then, if applicable, the occupational or functional stream in brackets, for example (Computer Systems).

For example:

- RII10109 Certificate I in Resources and Infrastructure Operations

Unit of Competency Titles

Each unit of competency title is unique. Unit of competency titles describe the competency outcome concisely, and are written in sentence case.

For example:

- RIIBEF201B Plan and organise work

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Qualifications Framework

The Australian Qualifications Framework

What is the Australian Qualifications Framework?

A brief overview of the Australian Qualifications Framework (AQF) follows. For a full explanation of the AQF, see the AQF Implementation Handbook. http://www.aqf.edu.au/Portals/0/Documents/Handbook/AQF_Handbook_07.pdf The AQF provides a comprehensive, nationally consistent framework for all qualifications in post-compulsory education and training in Australia. In the vocational education and training (VET) sector it assists national consistency for all trainees, learners, employers and providers by enabling national recognition of qualifications and Statements of Attainment.

Training Package qualifications in the VET sector must comply with the titles and guidelines of the AQF. Endorsed Training Packages provide a unique title for each AQF qualification which must always be reproduced accurately.

Qualifications

Training Packages can incorporate the following eight AQF qualifications.

- Certificate I in ...
- Certificate II in ...
- Certificate III in ...
- Certificate IV in ...
- Diploma of ...
- Advanced Diploma of **...**
- Vocational Graduate Certificate of ...
- Vocational Graduate Diploma of ...

Graduate Certificates and Graduate Diplomas can also be awarded in the vocational education and training sector under certain conditions see the *AQF Implementation Handbook* for details.

On completion of the requirements defined in the Training Package, a Registered Training Organisation (RTO) may issue a nationally recognised AQF qualification. Issuance of AQF qualifications must comply with the advice provided in the *AQF Implementation Handbook* and the AQTF 2010 *Essential Standards for Initial and Continuing Registration.*

Statement of Attainment

A Statement of Attainment is issued by a Registered Training Organisation when an individual has completed one or more units of competency from nationally recognised qualification(s)/courses(s). Issuance of Statements of Attainment must comply with the advice provided in the current *AQF Implementation Handbook* and the AQTF 2010 *Essential Standards for Initial and Continuing Registration.*

Under the AQTF 2010, RTOs must recognise the achievement of competencies as recorded on a qualification testamur or Statement of Attainment issued by other RTOs. Given this, recognised competencies can progressively build towards a full AQF qualification.

AQF Guidelines and Learning Outcomes

The *AQF Implementation Handbook* provides a comprehensive guideline for each AQF qualification. A summary of the learning outcome characteristics and their distinguishing features for each VET related AQF qualification is provided below.

Certificate I

Characteristics of Learning Outcomes

Breadth, depth and complexity of knowledge and skills would prepare a person to perform a defined range of activities most of which may be routine and predictable.

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Applications may include a variety of employment related skills including preparatory access and participation skills, broad-based induction skills and/or specific workplace skills. They may also include participation in a team or work group.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate knowledge by recall in a narrow range of areas;
- demonstrate basic practical skills, such as the use of relevant tools;
- perform a sequence of routine tasks given clear direction
- receive and pass on messages/information.

Certificate II

Characteristics of Learning Outcomes

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of operations to be applied.

Performance of a prescribed range of functions involving known routines and procedures and some accountability for the quality of outcomes.

Applications may include some complex or non-routine activities involving individual responsibility or autonomy and/or collaboration with others as part of a group or team.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate basic operational knowledge in a moderate range of areas;
- apply a defined range of skills;
- apply known solutions to a limited range of predictable problems;
- perform a range of tasks where choice between a limited range of options is required;
- assess and record information from varied sources;
- take limited responsibility for own outputs in work and learning.

Certificate III

Characteristics of Learning Outcomes

Breadth, depth and complexity of knowledge and competencies would cover selecting, adapting and transferring skills and knowledge to new environments and providing technical advice and some leadership in resolution of specified problems. This would be applied across a range of roles in a variety of contexts with some complexity in the extent and choice of options available.

Performance of a defined range of skilled operations, usually within a range of broader related activities involving known routines, methods and procedures, where some discretion and judgement is required in the section of equipment, services or contingency measures and within known time constraints.

Applications may involve some responsibility for others. Participation in teams including group or team co-ordination may be involved.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate some relevant theoretical knowledge
- apply a range of well-developed skills
- apply known solutions to a variety of predictable problems
- perform processes that require a range of well-developed skills where some discretion and judgement is required
- interpret available information, using discretion and judgement

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- take responsibility for own outputs in work and learning
- take limited responsibility for the output of others.

Certificate IV

Characteristics of Learning Outcomes

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature. Performance of a broad range of skilled applications including the requirement to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills. Applications involve responsibility for, and limited organisation of, others.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts
- apply solutions to a defined range of unpredictable problems
- identify and apply skill and knowledge areas to a wide variety of contexts, with depth in some areas
- identify, analyse and evaluate information from a variety of sources
- take responsibility for own outputs in relation to specified quality standards
- take limited responsibility for the quantity and quality of the output of others.

Diploma

Characteristics of Learning Outcomes

Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.

The self directed application of knowledge and skills, with substantial depth in some areas where judgment is required in planning and selecting appropriate equipment, services and techniques for self and others.

Applications involve participation in development of strategic initiatives as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

Distinguishing Features of Learning Outcomes

Do the competencies or learning outcomes enable an individual with this qualification to:

- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas
- analyse and plan approaches to technical problems or management requirements
- transfer and apply theoretical concepts and/or technical or creative skills to a range of situations
- evaluate information, using it to forecast for planning or research purposes
- take responsibility for own outputs in relation to broad quantity and quality parameters
- take some responsibility for the achievement of group outcomes.

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Advanced Diploma

Characteristics of Learning Outcomes

Breadth, depth and complexity involving analysis, design, planning, execution and evaluation across a range of technical and/or management functions including development of new criteria or applications or knowledge or procedures.

The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, technical or leadership/guidance functions related to products, services, operations or procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

Distinguishing Features of Learning Outcomes

Do the competencies or learning outcomes enable an individual with this qualification to:

- demonstrate understanding of specialised knowledge with depth in some areas
- analyse, diagnose, design and execute judgements across a broad range of technical or management functions
- generate ideas through the analysis of information and concepts at an abstract level
- demonstrate a command of wide-ranging, highly specialised technical, creative or conceptual skills
- demonstrate accountability for personal outputs within broad parameters
- demonstrate accountability for personal and group outcomes within broad parameters.

Vocational Graduate Certificate

Characteristics of competencies or learning outcomes

- The self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Substantial breadth and complexity involving the initiation, analysis, design, planning, execution and evaluation of technical and management functions in highly varied and highly specialised contexts.
- Applications involve making significant, high-level, independent judgements in major broad or planning, design, operational, technical and management functions in highly varied and specialised contexts. They may include responsibility and broad-ranging accountability for the structure, management and output of the work or functions of others.
- The degree of emphasis on breadth, as opposed to depth, of knowledge and skills may vary between qualifications granted at this level.

Distinguishing features of learning outcomes

- Demonstrate the self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Initiate, analyse, design, plan, execute and evaluate major broad or technical and management functions in highly varied and highly specialised contexts.
- Generate and evaluate ideas through the analysis of information and concepts at an abstract level.
- Demonstrate a command of wide-ranging, highly specialised technical, creative or conceptual skills in complex contexts.
- Demonstrate responsibility and broad-ranging accountability for the structure, management and output of the work or functions of others.

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Vocational Graduate Diploma

Characteristics of competencies or learning outcomes

- The self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Substantial breadth, depth and complexity involving the initiation, analysis, design, planning, execution and evaluation of major functions, both broad and highly specialised, in highly varied and highly specialised contexts.
- Further specialisation within a systematic and coherent body of knowledge.
- Applications involve making high-level, fully independent, complex judgements in broad planning, design, operational, technical and management functions in highly varied and highly specialised contexts. They may include full responsibility and accountability for all aspects of work and functions of others, including planning, budgeting and strategy development.
- The degree of emphasis on breadth, as opposed to depth, of knowledge and skills may vary between qualifications granted at this level.

Distinguishing features of learning outcomes

- Demonstrate the self-directed development and achievement of broad and highly specialised areas of knowledge and skills, building on prior knowledge and skills.
- Initiate, analyse, design, plan, execute and evaluate major functions, both broad and within highly varied and highly specialised contexts.
- Generate and evaluate complex ideas through the analysis of information and concepts at an abstract level.
- Demonstrate an expert command of wide-ranging, highly specialised, technical, creative or conceptual skills in complex and highly specialised or varied contexts.
- Demonstrate full responsibility and accountability for personal outputs.
- Demonstrate full responsibility and accountability for all aspects of the work or functions of others, including planning, budgeting and strategy.

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Assessment Guidelines

Introduction

These Assessment Guidelines provide the endorsed framework for assessment of units of competency in this Training Package. They are designed to ensure that assessment is consistent with the *Australian Quality Training Framework (AQTF) Essential Standards for Initial and Continuing Registration*. Assessments against the units of competency in this Training Package must be carried out in accordance with these Assessment Guidelines.

Assessment System Overview

This section provides an overview of the requirements for assessment when using this Training Package, including a summary of the AQTF requirements; licensing/registration requirements; and assessment pathways.

Quality assessment underpins the credibility of the vocational education and training sector. The Assessment Guidelines of a Training Package are an important tool in supporting quality assessment.

Assessment within the National Skills Framework is the process of collecting evidence and making judgements about whether competency has been achieved to confirm whether an individual can perform to the standards expected in the workplace, as expressed in the relevant endorsed unit of competency.

Assessment must be carried out in accordance with the:

- benchmarks for assessment
- specific industry requirements
- principles of assessment
- rules of evidence
- assessment requirements set out in the AQTF

Benchmarks for Assessment

The endorsed units of competency in this Training Package are the benchmarks for assessment. As such, they provide the basis for nationally recognised Australian Qualifications Framework (AQF) qualifications and Statements of Attainment issued by Registered Training Organisations (RTOs).

Principles of Assessment

All assessments carried out by RTOs are required to demonstrate compliance with the principles of assessment:

- Validity
- Reliability
- Flexibility
- Fairness
- Sufficiency

These principles must be addressed in the:

Design, establishment and management of the assessment system for this training package

Development of assessment tools,

And the conduct of assessment

Validity

Assessment is valid when the process is sound and assesses what it claims to assess. Validity requires that:

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(a)	assessment against the units of competency must cover the broad range of skills and knowledge that are essential to competent performance
(b)	assessment of knowledge and skills must be integrated with their practical application
(c)	judgement of competence must be based on sufficient evidence (that is, evidence gathered on a number of occasions and in a range of contexts using different assessment methods). The specific evidence requirements of each unit of competency provide advice on sufficiency

Reliability
Reliability refers to the degree to which evidence presented for assessment is consistently interpreted and results in consistent assessment outcomes. Reliability requires the assessor to have the required competencies in assessment and relevant vocational competencies (or to assess in conjunction with someone who has the vocational competencies). It can only be achieved when assessors share a common interpretation of the assessment requirements of the unit(s) being assessed.
Flexibility
To be flexible, assessment should reflect the candidate"s needs; provide for recognition of competencies no matter how, where or when they have been acquired; draw on a range of methods appropriate to the context, competency and the candidate; and support continuous competency development.
Fairness
Fairness in assessment requires consideration of the individual candidate"s needs and characteristics, and any reasonable adjustments that need to be applied to take account of them. It requires clear communication between the assessor and the candidate to ensure that the candidate is fully informed about, understands and is able to participate in, the assessment process, and agrees that the process is appropriate. It also includes an opportunity for the person being assessed to challenge the result of the assessment and to be reassessed if necessary.
Sufficiency
Sufficiency relates to the quality and quantity of evidence assessed. It requires collection of enough appropriate evidence to ensure that all aspects of competency have been satisfied and that competency can be demonstrated repeatedly. Supplementary sources of evidence may be necessary. The specific evidence requirements of each unit of competency provide advice on sufficiency. Sufficiency is also one of the rules of evidence.
Rules of Evidence
The rules of evidence guide the collection of evidence that address the principles of validity and reliability, guiding the collection of evidence to ensure that it is valid, sufficient, current and authentic.

Valid

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Valid evidence must relate directly to the requirements of the unit of competency. In ensuring evidence is valid, assessors must ensure that the evidence collected supports demonstration of the outcomes and performance requirements of the unit of competency together with the knowledge and skills necessary for competent performance. Valid evidence must encapsulate the breadth and depth of the unit of competency, which will necessitate using a number of different assessment methods.

Sufficient

Sufficiency relates to the quality and quantity of evidence assessed. It requires collection of enough appropriate evidence to ensure that all aspects of competency have been satisfied and that competency can be demonstrated repeatedly. Supplementary sources of evidence may be necessary. The specific evidence requirements of each unit of competency provide advice on sufficiency.

Current

In assessment, currency relates to the age of the evidence presented by a candidate to demonstrate that they are still competent. Competency requires demonstration of current performance, so the evidence collected must be from either the present or the very recent past.

Authentic

To accept evidence as authentic, an assessor must be assured that the evidence presented for assessment is the candidate"s own work.

Assessment Requirements of the Australian Quality Training Framework

Assessment leading to nationally recognised AQF qualifications and Statements of Attainment in the vocational education and training sector must meet the requirements of the AQTF as expressed in the AQTF 2010 *Essential Standards for Registration.*

The AQTF 2010 *Essential Standards for Initial and Continuing Registration* can be downloaded from <www.training.com.au>.

The following points summarise the assessment requirements.

Registration of Training Organisations

Assessment must be conducted by, or on behalf of, an RTO formally registered by a State or Territory Registering Body in accordance with the AQTF The RTO must have the specific units of competency and/or AQF qualifications on its scope of registration.

Quality Training and Assessment

Each RTO must provide quality training and assessment across all its operations. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*, Standard 1.

Assessor Competency Requirements

Each person involved in training, assessment or client service must be competent for the functions they perform. AQTF 2010 *Essential Standards for Initial and Continuing Registration*, Standard 1 for assessor (and trainer) competency requirements. See also the AQTF 2010 *Users" Guide to the Essential Standards for Registration* Appendix 2.

Assessment Requirements

The RTOs assessments, including RPL, must meet the requirements of the relevant endorsed Training Package. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

Assessment Strategies

Each RTO must have strategies for training and assessment that meet the requirements of the relevant Training Package or accredited course and are developed in consultation with industry stakeholders. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

National Recognition

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Each RTO must recognise the AQF qualifications and Statements of Attainment issued by any other RTO. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

Access and Equity and Client Outcomes

Each RTO must adhere to the principles of access and equity and maximise outcomes for its clients. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

Monitoring Assessments

Training and/or assessment provided on behalf of the RTO must be monitored to ensure that it is in accordance with all aspects of the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

Recording Assessment Outcomes

Each RTO must manage records to ensure their accuracy and integrity. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

Issuing AQF Qualifications and Statements of Attainment

Each RTO must issue AQF qualifications and Statements of Attainment that meet the requirements of the current AQF Implementation Handbook and the endorsed Training Packages within the scope of its registration. An AQF qualification is issued once the full requirements for a qualification, as specified in the nationally endorsed Training Package are met. A Statement of Attainment is issued when an individual has completed one or more units of competency from nationally recognised qualification(s)/courses(s). See the AQTF and the edition of the AQF Implementation Handbook-available on the AQF Council website < www.aqf.edu.au>.

Advice on occupational and licensing requirements or assessment specific to the units of competency and qualifications being submitted for endorsement

This section provides information on licensing/registration requirements for this training package, with the following important disclaimer.

Licensing and registration requirements that apply to the resources and infrastructure industry and other specific industries, and vocational education and training, vary between each state and territory, and can regularly change. The developers of this training package, and DEEWR, consider that the licensing/registration requirements described in this section apply to RTOs, assessors or candidates with respect to this training package.

While reasonable care has been taken in its preparation, the developers of this training package and DEEWR cannot guarantee that the list is definitive or accurate at the time of reading; the information in this section is provided in good faith on that basis.

Contact the relevant state or territory department(s) to check if the licensing/registration requirements described below still apply, and to check if there are any others with which you must comply. For further information contact:

Australian Capital Territory (ACT) www.ors.act.gov.au/WorkCover/WebPages/WorkSafe/ohs.htm	WorkCover/WorkSafe ACT
New South Wales (NSW) www.workcover.nsw.gov.au	WorkCover New South Wales
Northern Territory (NT) www.worksafe.nt.gov.au/	NT WorkSafe

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Queensland (QLD) http://www.justice.qld.gov.au/	Fair and Safe Work
South Australia (SA) www.safework.sa.gov.au	SafeWork SA
Tasmania (TAS) www.wst.tas.gov.au	Workplace Standards Tasmania
Victoria (VIC) www.worksafe.vic.gov.au	WorkSafe Victoria
Western Australia (WA) http://www.commerce.wa.gov.au/WorkSafe/	Department of Commerce (Worksafe Division)
National http://safeworkaustralia.gov.au/	Safe Work Australia

Requirements for Assessors

In order to conduct assessment for statutory licensing or other industry registration requirements, assessors must meet the requirements as determined by the regulator for the activity, in addition to the AQTF requirements.
The regulator will be the state/territory based SafeWork Australia representative body, unless otherwise indicated.
The following chart provides details of:

- the regulator across jurisdictions
- the regulated activity and jurisdiction/s in which regulations apply
-

License/Registration	Jurisdiction	**Contact**
	ACT	WorkCover/WorkSafe ACT www.ors.act.gov.au/WorkCover/WebPages/WorkSafe/ohs.htm
	NSW	WorkCover New South Wales www.workcover.nsw.gov.au
	NT	NT WorkSafe www.worksafe.nt.gov.au/

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	QLD	Fair and Safe Work http://www.justice.qld.gov.au/
	SA	SafeWork SA www.safework.sa.gov.au
	TAS	Workplace Standards Tasmania www.wst.tas.gov.au
	VIC	WorkSafe Victoria www.worksafe.vic.gov.au
	WA	Department of Commerce (Worksafe Division) http://www.commerce.wa.gov.au/WorkSafe/

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Plant Operation		
Boom Type Elevating Work Platform (boom length 11m or more)	ACT, NSW, QLD, SA, TAS, VIC, WA	
Forklift Truck	ACT, NSW, QLD, SA, TAS, VIC, WA	
Front End Loader	ACT, NSW, QLD, SA	
Front End Loader/Backhoe	ACT, NSW, QLD, SA, TAS, VIC, WA	
Front End Loader (Skid Steer type)	ACT, NSW, QLD, SA, TAS, VIC, WA	
Excavator	ACT, NSW, QLD, SA, TAS, VIC, WA	
Order Picking Forklift Truck	ACT, NSW	
Dragline Operation	ACT, SA	
Dozer	QLD, SA	
Grader	QLD	
Industrial Truck (Forklift) Operation	NT	
Roller	QLD	
Scraper	QLD	
Telescopic Handler Requirement will be determined by the	SA	

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attachment fitted to the telescopic handler and whether it is a slewing or non-slewing machine		
Tilt Top Construction Crane Operation	WA	
Tower Crane Operation	NT, QLD, SA, TAS, VIC, WA	
Derrick Crane Operation	NT, QLD, SA, TAS, VIC, WA	
Portal Boom Crane Operation	NT, QLD, SA, TAS, VIC, WA	
Bridge and Gantry Crane Operation	NT, QLD, SA, TAS, VIC, WA	
Vehicle Loading Crane Operation	NT, QLD, SA, TAS, VIC, WA	
Non-slewing Mobile Crane Operation	NT, QLD, SA, TAS, VIC, WA	
Slewing Mobile Crane Operation (up to 20 tonne)	NT, QLD, SA, TAS, VIC, WA	
Slewing Mobile Crane Operation (up to 60 tonne)	NT, QLD, SA, TAS, VIC, WA	
Slewing Mobile Crane Operation (up to 100 tonne)	NT, QLD, SA, TAS, VIC, WA	
Slewing Mobile Crane Operation (Open)	NT, QLD, SA, TAS, VIC, WA	

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Hoist Operation(Cantilever Platform)	NSW, NT, TAS, VIC	
Hoist Operation (Personnel and Materials)	SA, NSW, NT, TAS, VIC	
Concrete Placing Boom Operation	NSW, NT, TAS, WA	
Self Erecting Tower Crane	QLD, TAS, VIC	
Rigging and Scaffolding		
Basic Scaffolding	NT, QLD, SA, TAS, VIC, WA	
Intermediate Scaffolding	NT, QLD, SA, TAS, VIC, WA	
Advanced Scaffolding	NT, QLD, SA, TAS, VIC, WA	
Dogging	NT, QLD, SA, TAS, VIC, WA	
Basic Rigging	NT, QLD, SA, TAS, VIC, WA	
Intermediate Rigging	NT, QLD, SA, TAS, VIC, WA	
Advanced Rigging	NT, QLD, SA, TAS, VIC, WA	
Pressure Systems		
Basic Boiler Operation	NT, WA, TAS, VIC	

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Intermediate Boiler Operation	NT, WA, TAS, VIC	
Advanced Boiler Operation	NT, WA, TAS, VIC	
Turbine Operation	NT, WA, TAS, VIC	
Reciprocating Steam Engine Operation	NT, WA, TAS, VIC	
Shotfiring and Blasting		
	ACT	WorkCover/WorkSafe ACT www.ors.act.gov.au/WorkCover/WebPages/WorkSafe/ohs.htm
	NSW	Department of Minerals and Petroleum www.minerals.nsw.gov.au
	NT	NT Worksafe www.worksafe.nt.gov.au
	QLD	Department of Mines and Energy www.dme.qld.gov.au
	SA	SafeWork SA www.safework.sa.gov.au
	TAS	Workplace Standards Tasmania www.wst.tas.gov.au
	VIC	Department of Primary Industries (Earth Resources Development Division) http://new.dpi.vic.gov.au/earth-resources
	WA	Department of Mines and Petroleum http://www.dmp.wa.gov.au/

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Shotfirer	ACT, NSW, NT. QLD, SA, TAS, WA	
Blaster	ACT, NSW, NT. QLD, SA, TAS, WA	
Agricultural/Seismic/ Small Scale Blasting	QLD	
Quarrying/Opencut Mining/Construction	QLD	
Tunnelling and Underground Mining	QLD	
A Licence to Use (for Oil Wells)	QLD	
Drivers licence requirement as per vehicle in use		
	ACT	Road Transport Authority http://www.rego.act.gov.au/
	NSW	Road and Traffic Authority NSW www.rta.nsw.gov.au
	NT	Northern Territory Transport Group http://www.nt.gov.au/transport/
	QLD	Queensland Transport www.transport.qld.gov.au
	SA	Transport SA www.transport.sa.gov.au
	TAS	Department of Infrastructure Energy and Resources www.transport.tas.gov.au/licence_information
	VIC	VicRoads www.vicroads.vic.gov.au
	WA	Department of Transport

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		www.dpi.wa.gov.au/licensing	
Explosives Driver (only applicable for drivers for a prime contractor who hold an explosive transport licence)	WA	Department of Mines and Petroleum http://www.dmp.wa.gov.au/	
Carry Explosives		SafeWork SA http://www.safework.sa.gov.au/	
High Risk Work			
A License to Perform High Risk Work	TAS	Workplace Standards Tasmania www.wst.tas.gov.au	
High Risk Work (HRW)	WA	Department of Commerce (Worksafe Division) http://www.commerce.wa.gov.au/WorkSafe/	
Confined Space Entry	National	Refer Plant Operation for state Contacts	
Asbestos Removalist	National	Refer Plant Operation for state Contacts	
Elevating Work Platform Operation	National	Refer Plant Operation for state Contacts	
Traffic Management			
	SA	Transport SA www.transport.sa.gov.au	
	TAS	Department of Infrastructure, Energy and Resources www.dier.tas.gov.au	
	WA	Main Roads WA http://www.mainroads.wa.gov.au/Pages/Welcome.aspx	

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Traffic Management	TAS, SA	
Basic Traffic Controller	WA	
Advanced Traffic Controller	WA	
Workzone Traffic Management	SA	
Basic Worksite Traffic Management	WA	
Worksite Traffic Management	WA	
Advanced Worksite Traffic Management	WA	
Traffic Controller	WA	
Sector specific – Mining		
Open Cut Examiners	QLD	Department of Mines and Energy www.dme.qld.gov.au
Deputy's Certificate of Competency (also known as Mine Deputies or ERZ Controller)	QLD	
Second Class Mine Manager's Certificate of Competency (Underground Coal Mine)	QLD	
First Class Mine Manager's Certificate of Competency (Underground Coal Mine)	QLD	
First Class Mine Manager's Certificate of Competency	QLD	

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(Underground Metalliferous Mines)		
Quarrying/Opencut Mining/Construction	QLD	
Tunnelling and Underground Mining	QLD	
A Licence to Use (for Oil Wells)	QLD	
SRS Licence (Security Risk Substances)	WA	Dangerous Goods Safety (Security Risk Substances) Regulations 2007 for risk substances http://www.austlii.edu.au/au/legis/wa/consol_reg/dgsrsr2007628/
National Police Check	WA	Required for SRS Licence http://www.police.wa.gov.au/Ourservices/Policechecks certificates/NationalPoliceCertificates/tabid/1339/Default.aspx
Sector specific – Civil Construction		
Green Card	SA, NSW	CITB www.citb.org.au
White Card	SA, WA, NSW	SafeWork SA www.transport.sa.gov.au also Blue Card QLD only and Red Card WA only
Sector specific – Drilling		
National Water Well Drillers' Licence	National	Australian Drilling Industry Training Committee (Examining Body) http://www.aditc.com.au/
	NSW	Office of Water http://www.water.nsw.gov.au/Water-licensing/About-licences/Driller-s-licences/Driller-s-licences/default.aspx
	NT	Department of Natural Resources, the Arts and Sport

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		www.nreta.nt.gov.au
	QLD	Department of Environment and Resource Management: http://www.derm.qld.gov.au/
	SA	Department for Water http://www.waterforgood.sa.gov.au/
	TAS	Department of Primary Industries, Parks, Water and Environment http://www.dpiw.tas.gov.au/
	Vic	Department of Sustainability and Environment www.dse.vic.gov.au
	WA	Australian Drilling Industry Association www.adia.com.au
Petroleum and Gas Drilling	QLD	Department of Employment and Economic Development and Innovation (DEEDI) Mining and Safety www.mines.industry.qld.gov.au

- These requirements may be met through a range of methods. Further information is available through the contacts provided for each State and Territory.

- The High Risk units which result in the related OHS licence are following units

CPCCLBM3001A	License to operate a concrete placing boom
CPCCLDG3001A	License to perform dogging
CPCCLH3001A	License to operate a personnel and materials hoist
CPCCLHS3002A	License to operate a materials hoist
CPCCLRG3001A	License to perform rigging – basic level
CPCCLRG3002A	License to perform rigging – intermediate level
CPCCLRG4001A	License to perform rigging – advanced level
CPCCLSF2001A	License to erect, alter and dismantle scaffolding – basic level

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CPCCLSF3001A	License to erect, alter and dismantle scaffolding – intermediate level
CPCCLSF4001A	License to erect, alter and dismantle scaffolding – advanced level
CPCCLTC4001A	License to operate a tower crane
CPCCLTC4002A	License to operate a self-erecting tower crane
TLILIC1208A	Licence to operate a vehicle loading crane (capacity ten metre tonnes and above)
TLILIC408A	Licence to operate a derrick crane
TLILIC708A	Licence to operate a portal boom crane
TLILIC808A	Licence to operate a slewing mobile crane (up to 20 tonnes)
TLILIC908A	Licence to operate a slewing mobile crane (up to 60 tonnes)
TLILIC1008A	Licence to operate a slewing mobile crane (up to 100 tonnes)
TLILIC1108A	Licence to operate a slewing mobile crane (over 100 tonnes)
TLILIC308A	Licence to operate a bridge and gantry crane
TLILIC608A	Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)
TLILIC508A	Licence to operate a boom type elevating work platform (boom length 11 metres or more)
TLILIC108A	Licence to operate a forklift truck
TLILIC208A	Licence to operate an order picking forklift truck

-
- These requirements may be met through a range of methods. Further information is available through the contacts provided for each state and territory.
-
- The High Risk units which have been imported to the RII09 Resources and Infrastructure Industry training package are as follows:
-

CPCCLDG3001A	License to perform dogging
CPCCLRG3001A	License to perform rigging basic level
CPCCLSF2001A	License to erect, alter and dismantle scaffolding basic level

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The RII09 training package contains industry units of competency that relate to High Risk Work licence units of competency. The industry units are not intended to replace the High Risk units but to provide industry with a competency recognition framework for a) application of the licensed activity in the work environment and / or b) conduct of the activity when the definitions for the application of the National Standard for High Risk Work do not apply. RTOs must establish whether the activity being undertaken requires completion of the High Risk Work licence units and ensure that this requirement is met. This may be achieved through: co-assessment of the unit of competency with/by a registered assessor; gap training for a person already holding the High Risk Work Unit of Competency.
Qualification packaging rules do not include all of the High Risk Work licence units of competency that relate to the RII units of competency. Industry requires that the licence requirement be met through:

- holistic assessment of the RII and High Risk Work unit of competency (ensuring assessor and assessment requirements for both units are met)
- using the import option for the High Risk Work unit of competency
- credit transfer for the High Risk Work unit of competency (if applicable)

The table below details the affected RII units of competency and related High Risk Work Licence units of competency

Construction and property services training package

Unit code	Unit title	Unit code	Unit title
CPCCLDG3001A	Licence to perform dogging	RIIHAN208A	Perform dogging
CPCCLHS3001A	Licence to operate a personnel and materials hoist	RIIMPO207A	Operate a personnel and materials hoist
CPCCLRG3001A	Licence to perform rigging basic level	RIIHAN209A	Perform basic rigging
CPCCLRG3002A	Licence to perform rigging intermediate level	RIIHAN210A	Perform intermediate rigging
CPCCLSF2001A	Licence to erect, alter and dismantle scaffolding basic level	RIIHAN211A	Conduct basic scaffolding operations
CPCCLSF3001A	Licence to erect, later and dismantle scaffolding intermediate level	RIIHAN302A	Conduct intermediate scaffolding operations

Transport and Logistics training package

Unit code	Unit title	Unit code	Unit title

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TLILIC108A	Licence to operate a forklift truck	RIIHAN201A	Operate a forklift
TLILIC308A	Licence to operate a bridge and gantry crane	RIIHAN305A	Operate a gantry or overhead crane
TLILIC508A	Licence to operate a boom-type elevating work platform (boom length 11 metres or more)	RIIHAN301A	Operating elevating work platform
TLILIC608A	Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)	RIIHAN212A	Conduct non-slewing crane operations
TLILIC808A	Licence to operate a slewing mobile crane (up to 20 tonnes)	RIIHAN304A	Conduct slewing crane operations
TLILIC1208 A	Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)	RIIHAN307A	Operate a vehicle loading crane

The Mining Regulations vary from State to State. While some of the qualifications and units of competency are associated with statutory positions, none of the qualifications result in a Statutory Ticket – this is issued by the State Mining Regulator. All participants/employees are advised to check with their employer and regulator in their State/Territory.

Further Information on Requirements for Assessors

In addition to the National Skills Standards Council's Training and Assessment Competencies to be held by trainers and assessors (as noted in the *AQTF Essential Standards for Registration*) it is industry's preferred approach that assessors are compliant with the following requirements:

- demonstrate current knowledge and experience of the industry, industry practices, and the job or role against which performance is being assessed. This may be demonstrated through evidence of actual workplace experience within the last two years or one or more of the following:
- attendance at professional development/training and education activities focusing on good practice in the relevant industry competencies
- participation in professional/industry networks
- demonstrate current knowledge and skill in assessing against this training package in a range of contexts. This may be demonstrated through at least one of the following:
- familiarity with the units of competency in this training package to be used by the learner as a basis of assessment
- recent planning, conduct and review of assessment and/or workplace training activities in a relevant industry context
- participation in moderation/validation processes

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- attendance at professional development activities focused on assessment and/or workplace training
- demonstrate the necessary interpersonal and communication skills required in the assessment process. This may be demonstrated through evidence of one or more of the following:
- attendance at professional development and/or training activities focused on effective communication in assessment and/or workplace training contexts
- knowledge of language, literacy and numeracy issues in the context of assessment and workplace training
- recent assessment and/or workplace training activities

This training package provides a range of options for meeting the assessor requirements. Assessments in the Resources and Infrastructure industries can be undertaken in a variety of contexts by individual assessors, partnerships involving assessors and technical experts, and teams of assessors.

All RTOs must consult with responsible industry personnel to determine the appropriateness of the assessor for on-the-job assessments at a worksite. This is particularly important for mining sites. Specific criteria may exist for assessors who are assessing an employee/candidate for a qualification which is a requirement for the issue of a statutory licence to practice, e.g. shotfirer. In such instances, the RTO must clarify the specific criteria as this requirement may vary between states and/or territories depending on legislative requirements. (Refer to Requirements for Assessors). The case studies provided show how the requirement to use qualified assessors can be met.

Partnership Arrangements

Under the AQTF, RTOs may enter into partnerships with non-registered organisations, such as schools, industry organisations and enterprises, for delivery and assessment within the RTOs scope of registration.

Where this is done, the RTO must have a formal agreement with the organisation that provides the training and/or assessment under its name. The agreement must specify how all parties will discharge their responsibilities for ensuring the quality of the training and/or assessment conducted on its behalf, including the qualification requirements for delivery and assessment.

The RTO has full responsibility for the quality and outcomes of any training or assessment conducted on its behalf, and it must maintain a register of all such agreements.

The following case studies provide examples of partnership arrangements Resources and Infrastructure enterprises have formed with RTOs.

Case study 1 — Partnership to deliver training and assessment

A mine site developed a partnership arrangement with an RTO where the RTO provides off-the-job training and assessment and the enterprise will provide on-the-job training and workplace evidence that support an employee's achievement of units of competency. In this arrangement the enterprise trainer does not conduct assessment but may provide testimonials documenting first hand observation.

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The RTO established that the workplace trainer is suitably qualified and together the roles and responsibilities of each party are established. The RTO ensures that the enterprise understands their requirement to conduct moderation, validation and other checks to ensure quality requirements are met.

The RTO trainer/assessor and the enterprise trainer identify the required units of competency and agree on the assessment tools and processes to be used both on and off-the-job. The RTO provides classroom-based training and assessment that ensures the employee has the required underpinning knowledge for the selected units of competency.
The enterprise provides on-the-job training and the workplace supervisor/coach or trainer assists the employees to gather the required evidence to support their achievement of the units of competency. This evidence includes pre-operational check sheets, inspection checklists, safety device testing and operational production reporting documentation for individual operators. The RTO assessor uses the workplace evidence in conjunction with the off-the-job assessments to determine the operator's competency and eligibility for a Statement of Attainment or Certificate level qualification. Where necessary, the RTO assessor may require additional evidence or conduct direct assessment to ensure competence has been demonstrated.

Case study 2 — Partnership for assessment only

A mine site has entered into a partnership arrangement with an RTO for the RTO to provide an on-the-job assessment only service using qualified assessors. All training is provided on-the-job by the mine.
The mine trainer and the RTO agree on the training outcomes required to achieve the units of competency and the assessment tools to be used. The RTO also provides the mine trainer with the RTO assessors' CVs and gains agreement as to their suitability for on-the-job assessment. When the employees have completed their on-site training, the RTO is informed and a suitable time arranged for the assessments. The RTO assessor conducts the assessments using the agreed assessment tools as well as ensuring safe workplace and assessment conditions, complying with permit/access and ensuring minimal interruption to mine operations. The RTO awards Statements of Attainment and/or qualifications to the successful employees.

Case study 3 — Partnership for all on-the-job training and assessment by the mine

A mine has entered into a partnership agreement with an RTO for the RTO to recognise the mine assessments and issue successful employees with Statements of Attainment or qualifications. The agreement between the mine and the RTO clearly sets out the roles and responsibilities of both parties. In particular the mine will use qualified assessors and the RTO will monitor the assessment process and outcomes, a requirement under the AQTF. The communication arrangements between the parties are also documented.
The RTO works with mine personnel to document the assessment process, the range of evidence to be collected and record keeping requirements and to confirm the assessor qualifications. Joint validation and moderation is carried out with the workplace assessor and a procedure for validating the assessment strategies and tools is agreed and documented. The RTO visits the mine and validates the assessment process, strategies and tools and recommends any action for improvement.
The mine completes all training and assessments using the agreed assessment strategies and tools and informed the RTO of the outcomes. The RTO awards the Statements of Attainment or qualification to successful applicants. Under the AQTF the RTO annually conducts an audit of the assessment process and tools to ensure validity, reliability, fairness and flexibility and recommends any action to improve consistency.

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Case study 4 — An individual assessor conducts the assessment

A mining company has entered into an agreement with an RTO for the RTO to conduct workplace assessments for employees to gain national qualifications. The mining company has agreed to use the RTO assessor who satisfies the training package requirements and guidelines for the relevant assessor competencies.

The RTO assessor was formally a mine operator with some 15 years experience in the industry. The RTO assessor has been assessed and gained Statements of Attainment in the units of competency that they will be assessing.

The assessor conducts the workplace assessments under the national AQTF principles, training package requirements and RTO policies, procedures and practices. As well, the RTO assessor meets mine site requirements for ensuring a safe workplace and assessment conditions, complying with permit/access and ensuring minimal interruption to mine operations.

Case study 5 — An assessor works with a technical expert to conduct the assessment

A mining company has its own internal training systems. For quality reasons the company maintains a small group of highly experienced mine operators who are operator/trainers, who have been nominated by the mine manager, and who have undertaken internal training and on-the-job competency assessment using the company resources for several years.

he company selects an RTO with the appropriate qualification on its scope of registration. The RTO assessor satisfies the training package requirements and guidelines for the relevant assessor competencies. However the assessor does not possess the operational competencies or technical knowledge of mining operations. Together the RTO assessor and the company operator/trainers undertake a review of the company assessments and modify the materials and process to meet the national competency requirements.

They then ‘trial’ the new assessments with operator/trainers. During the trial they provide the company operators/trainers with Statements of Attainment and/or qualifications for the units of competency which they will be assessing as a technical expert with the RTO. After the ‘trial’ the RTO assessor and the mining company technical expert (operator/trainer) facilitate on-the-job assessments to meet the company, individual operator and competency/training package requirements.

Agreed assessment practices include a requirement that the company technical experts only assess operators who are not on their roster and who have been trained by other operator/trainers.

Case study 6 — An assessor works with the workplace supervisor in collecting evidence for valid assessments

A mining company has developed a partnership arrangement with an RTO that includes the workplace supervisor assisting in agreed assessment and reporting practices. A workplace supervisor/team leader from the trainee's roster is required to assist in providing anecdotal and job record evidence of satisfactory performance over a period of time as evidence that will contribute towards the assessment outcomes. In this arrangement the workplace supervisor does not conduct assessment but may provide testimonials documenting first hand observation. The RTO ensures a process is in place to confirm the impartiality of the supervisor.

The workplace supervisors/team leaders do not hold national assessor competencies in operations but are deemed competent by the RTO, which also has scope for the assessor competencies. . The RTO is also negotiating with the mining company for the workplace supervisor/team leader to gain the relevant assessment units of competency.

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The workplace supervisor/team leader is able to provide recent evidence of competence, including pre-operational checks, inspection checklists, safety device testing and operational production reporting documentation for individual operators. The workplace supervisor/team leader is able to provide oral evidence against the competency requirements of communication and problem solving. The RTO undertakes the review, validation and moderation of evidence and has responsibility for ensuring the evidence provided is satisfactory.

This evidence informs the overall assessment and eliminates, in some instances, the necessity for an operator to repeat, by demonstration, competency assessment tasks.

Case study 7 — A team assessment

The Training Department in a mining enterprise has mapped the enterprise specific work activities and outcomes for team leaders against the national competency standards for the Certificate IV Extractive Industries qualification. An evidence guide was developed directly linked to workplace performance. This evidence guide specified workplace documentation and site-specific activities that could be used as evidence in a portfolio for assessment.

An assessment guide and a mentor (usually a one up manager) are provided to assist a team leader prepare for assessment. Working through the assessment guide the team leader identifies sufficient existing evidence and implements site improvements where required. When sufficient evidence has been established for one or more workplace activities the team leader requests an assessment.

The assessment is undertaken by a qualified assessor, who satisfies the training package requirements and guidelines for the relevant assessor competencies, and a senior specialist manager.

Evidence for the assessment is drawn from a range of sources, including the portfolio of evidence and the team leader's team members. If the assessment identifies some areas where further training or development activities should occur, an action plan is drawn up which is agreed to by the team leader and their manager.

Subsequent assessments, and re-assessments if necessary, cover the units of competency required for a Certificate IV. A final review of all completed assessments is conducted by a senior management team and the national training adviser before a qualification is issued.

This process requires the candidate for assessment to be actually working on a site and challenges the notion of people learning in a classroom. The assessment process can be resource intensive and some managers are challenged by the need for demonstrated continuous improvement in site performance and providing greater autonomy to supervisors and team leaders.

The enterprise has found advantages in that linking the training and assessment to the worksite drives continuous improvement in site performance. The manager is engaged as a stakeholder and the action plans ensure that required training and mentoring actually happens.

Case study 8 — An RPL process

A mining company, registered as an RTO, wished to use RPL/RCC to recognise employee knowledge and skills against the national competency standards. Many of the employees had been employed at other mines where they had gained licences and participated in training programs and so felt that they need not participate in any further assessment. The mining company put in place a structured process for RPL/RCC, which met the training package requirements. The steps in the process included:

Step 1: Assisting the employee to gather all existing documentation of skills

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Mining company assessors discussed the process with the employees and identified the units of competency/qualifications they wished to gain. The employees were encouraged to gather all relevant documentation from previous work roles, training and assessment and recognition of current skills that related to the selected units of competency. This included such documents as a CV, any relevant work history, results of previous training, work duties, copies of licences gained, tool boxes etc.

This documentation provided the assessor with an excellent snapshot of the competencies the employee should be able to gain.

Step 2: Ensuring the desired competencies are current

The assessor explained to the employees that each mine has different standards and ways of recording training outcomes. Some of the training recognition and licences were more than 5 years old. To ensure their current employer maintained their Duty of Care and the mine standards, there was a need for a formal process to ensure the competencies sought were current, that there was sufficient evidence and that the knowledge and skills met the requirements of the national units of competency and qualifications.

Although there was some negativity towards having to be re-assessed in some circumstances, the employees agreed when their work history was to be used as part of the evidence for the assessment.

It was found that the assessment process although rigorous was very quick as the assessor had the work history, recent in-house training outcomes, supervisor comments and workplace records to form part of the evidence.

Step 3: Formalising the outcomes

Many employees were surprised and pleased with the assessment outcomes. Others found that as they had not used the skill for some time they were a little rusty and required some update training. The employer provided the training as part of the agreed arrangement.

Employees were awarded Statements of Attainment or qualifications against the national training package and were proud of their recognition.

Step 4: Formalising the RPL/RCC process in the work processes

The RPL/RCC activity opened up communication lines and ensured greater consultation with individuals and groups. When looking to gain RPL/RCC it was easy to look at the occupational health and safety issues as well as technical knowledge and skills. The whole RPL/RCC and assessment process became blended into work processes rather than looking at it as a separate event that disrupted the work routine.

The mining company found that there had been a change in the culture in the workplace and productivity improved.

The assessment design will be required to incorporate features which will ensure adequate evidence is gathered for each of the components identified below:

Underpinning knowledge

It will be difficult, and often impossible, to gather sufficient evidence of the required essential knowledge by means of direct observation alone. It will be necessary to include some form of questioning, which may, or may not, be concurrent with direct observation. Questioning should not rely on written communication to any greater degree than is otherwise required by the unit of competency. The use of diagrams and sketching, demonstration and description along with third party evidence should be allowable within the assessment of essential knowledge.

Routine skills

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Sufficient evidence of competent performance of routine skills may be obtained by direct observation. However, observation on more than one occasion would be required if direct observation is the sole evidence gathering method used as the observation needs to include performance of the skills under a range of all normal and some abnormal conditions. As multiple direct observations are often impractical, other evidence gathering tools (such as supervisor and other third party reports) should be included to gather evidence of consistent performance under a range of conditions. The emphasis is on evidence of competent performance rather than on direct observation, and this may come from drill logs, work colleagues and other sources.

Refer to contacts or skillsdmc@skillsdmc.com.au for detail of industry assessment tools which may be used either directly or as models to develop customised tools. Workplaces or RTOs may also wish to develop their own specific assessment tools to complement the national tools or as an alternative to the national tools.

Non-routine skills

By their nature the non-routine skills are unlikely to be able to be assessed adequately by direct observation. These skills include problem solving and emergency response and it would be inappropriate to set up a situation, or to wait for a situation to occur, which would allow for direct observation.

In most cases, the use of third party evidence, such as from supervisors and other work colleagues will be the most practical form of evidence for non-routine skills. This implies that a person will not be deemed competent in these non-routine skills until they have had a range of experience which will allow them to have accumulated evidence of their ability to handle non-routine situations.

In some situations, such as emergency response, some appropriate form of simulation (e.g. a fire drill) may be the best form of gathering sufficient, appropriate evidence of competence. Case studies may be appropriate in some circumstances to increase the evidence available. Simulation/case studies may also be used for safety and cost effectiveness reasons.

Where the appropriate choice between these is restricted, this will be stated in the unit of competency. Generally, where:

- physical skills are significant (e.g. emergency procedures), then a simulation may be the preferred method (this may require coordination with a regular ‘safety drill’)
- cognitive skills are significant (e.g. problem solving) then a case study may be the preferred method

It is recommended that at least two different methods of gathering evidence be used in any assessment. Methods of gathering evidence for an assessment may include:

- direct observation
- demonstration on the job
- third party reports e.g. peer/team leader/3600 review
- questioning – written, verbal
- workplace documents – logs, reports etc
- scenarios/case studies
- projects
- simulation, routine drills
- interview

The ability to demonstrate performance at the level of a unit of competency as a whole is the key criteria in any assessment process.

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Requirements for Candidates

Individuals being assessed under statutory licensing and industry registration systems must comply with training and experience requirements additional to the minimum requirements identified in this Training Package.

Requirements for RTOs

Resources and Infrastructure industry members have identified their expectations in relation to the roles and responsibilities of RTOs delivering and assessing against the units of competency and the qualifications in this package. The RTOs are expected to:

- ensure the quality of the delivery and assessment
- ensure trainers have relevant industry experience and maintain industry currency
- ensure these assessment guidelines are used as the basis for assessing against the units of competency and qualifications in this training package
- provide comprehensive and accessible advice to employers and learners on their responsibilities and rights
- ensure assessors have the appropriate qualifications and experience as set out in these assessment guidelines
- ensure appropriate processes for industry involvement in consultation and validation of assessment

In addition to requirements specified in the *Essential Standards for Registration*, units of competency from the Resources and Infrastructure training package should, wherever possible, be assessed in a work environment. Where this is not possible, assessment may occur in a simulated environment. A simulated environment must duplicate the conditions of the work environment and satisfy the assessment requirements as stated in the Evidence guide of the unit of competency.
A simulated work environment may be required for the following reasons:

- the workplace may not use the relevant skill, equipment or process
- conducting assessments may be disruptive or interfere with work requirements, for example, there may be ethical, privacy or confidentiality issues to consider
- it may not be appropriate to apply the skills in the workplace due to potential risks such as those to health and safety or equipment being damaged

In order to be a valid and reliable venue from which to assess a competency, the simulation must duplicate the conditions of a real work environment; the range of activities that occur must reflect real work experience.
When a simulated work environment is being set up, it is crucial that the assessor is thoroughly familiar with the competency standard being assessed, as well as experienced in the current circumstances of the work. The RTO/assessor must ensure that the assessment environment includes:

- use of the full range of plant and/or equipment required to conduct to undertake the task in the workplace
- use of up-to-date equipment and software

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- reflects times and deadlines
- shows the complexity of dealing with multiple tasks
- involves prioritising among competing tasks
- work with others in a team
- communication with diverse groups
- finding, discuss and test solutions to problems
- exploring Occupational Health and Safety issues
- answering practically oriented, applied knowledge questions
- showing the level of written and verbal expression sufficient for, but not exceeding, the work requirements
- reflecting the requirement for a range of different conditions to be demonstrated

Assessment of competency requires the collection of evidence and this should be conducted over a period of time (at the workplace and/or a simulated work environment) to ensure that the demonstration of competency is valid and reliable. The individual being assessed should be aware that collection of evidence needs to be ongoing and they, therefore, need to be part of the planning, conduct and review of the assessment process.
The requirements for assessment for all RII units of competency requirements are stated in the Evidence Guide of the unit of competency and the training package assessment guidelines. All RII units of competency state:
Critical aspects for assessment and evidence required to demonstrate competency in the unit includes:

- knowledge of the requirements, procedures and instructions for the task
- ***implementation*** of requirements, procedures and techniques for the safe, effective and efficient completion of the task
- working with others to undertake and complete the task
- ***consistent*** timely ***completion of the task***

Context of and specific resources for assessment which states:

- This unit must be assessed ***in the context of the work environment.*** Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it ***is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.***
- Assessment of this competency ***requires typical resources normally used in a resources and*** infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

Assessment in the ***work environment*** means that the candidate is assessed in a context that is a workplace, or that very closely replicates a workplace. The collection ***of evidence should be conducted over a period of time (at the workplace) to ensure that the demonstration of competency is valid and reliable***. The candidate should be aware that ***collection of evidence needs to be ongoing*** and they need to be part of the planning, conduct and review of the assessment process.
Method of assessment
The assessment strategy for this unit must verify ***required knowledge and skill and practical application using more than one of the following assessment methods***:

- written and/or oral assessment of the candidate's required knowledge
- ***observed***, documented and/or first hand testimonial evidence of the candidate's:

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- ***implementation*** of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
- ***consistent*** achievement of required outcomes
- ***first hand testimonial*** evidence of the candidate's working with others to ***undertake and complete*** the task

The assessment must ensure that it addresses all areas of the ***application*** of Required Skills and Knowledge in the context of the Range Statement, in the work environment to satisfy the performance criteria to the standard of the workplace.

Supporting integrated training delivery and assessment

As a general principle, the Resources and Infrastructure industries support the integration of units of competency for assessment, where practical. An integrated approach reflects real work practices in that it brings together a number of units of competency. For example, an employee working on a worksite would complete a number of interrelated functions and occupational, health and safety tasks at the same time, not simply one task at a time. An integrated assessment activity would be designed to collect evidence for a number of units together rather than designing one assessment activity for each individual element of the relevant performance criteria.

Where both training and assessment are required, industry supports an approach which provides for off-the-job training combined with assessment of the application of skills and knowledge in a real work situation.

The Resources and Infrastructure training package defines off-the-job assessment as that which occurs away from the normal operation of the business including, for example, assessment which may occur in the workplace but not under normal industry working conditions. The industry considers it important for candidates to have the opportunity to develop competency in structured learning programs, which includes assessing in the workplace whenever possible.

The Resources and Infrastructure training package defines on-the-job assessment as that assessment which occurs in the workplace as part of the normal operation of the business.

Where an integrated competency assessment approach is implemented it is expected that several integrated competency assessments would be necessary to cover the breadth and complexity of the qualification, from Certificate I to Advanced Diploma.

The context of the assessment, the role of the candidate and the complexity of the task will influence how many units of competency are to be integrated.

Ways *of minimising the cost of the assessment process*

RTOs should, where possible, find ways to minimise the cost and inconvenience caused by assessment activities. For example:

- check candidate's readiness for assessment before proceeding
- use performance of actual work activities as sources of evidence
- arrange for demonstrations of competence in the most appropriate place
- make the assessment only as precise and/or complex as necessary at the candidate's level of qualification and occupational area
- separate evidence gathering from judgement, and assign evidence gathering to less expensive personnel (including candidates themselves)
- design assessment events so that the candidate can have prior knowledge of the requirements and can be actively involved in evidence gathering
- use holistic assessment scenarios which build on secondary evidence such as a record book, trainer's report or workplace report

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- limit the number of times a single competency or similar competencies are assessed
- monitor progress as part of normal responsibilities, rather than relying on assessment events
- provide self appraisal tools for candidates
- assess more than one competency at a time
- use of technology to support training and assessment strategies eg teleconferencing, videoconferencing, digital media, Elearning, email

Assessment strategies

Each RTO must have strategies for training and assessment that meet the requirements of the relevant training package or accredited course and are developed in consultation with industry stakeholders.

See the *AQTF 2010 Essential Conditions and Standards for Continuing Registration* and the *AQTF Essential Conditions and Standards for Initial Registration* and or/the Standards for NVR Registered Training Organisations *for RTOs registered with the Australian Skills Quality Authority (ASQA).*

SkillsDMC strongly recommends the implementation of a systems approach in implementing training and assessment. This will incorporate an enterprise and individual training needs analysis, training and assessment (as required), issuance of accreditation as applicable and support to fulfil relevant licensing requirements, evaluation and review.

The Skills Maximiser training needs analysis and workforce planning and development tool has been developed in consultation with industry to support the systems approach to training. Contact skillsdmc@skillsdmc.com.au for further information.

RTOs not utilising the tools available through the industry skills council are advised to ensure that their own planning tools reflect, at the least, an equivalent degree of planning and recognition of the application of competence as it is demonstrated in the workplace.

Assessment of competency will be in accordance with the relevant industry sector and state legislation applying in each state and territory. This will include:

- Duty of care requirements
- Occupational Health and Safety Acts and Regulations
- Environmental Protection Acts and Regulations
- Heritage Protection Acts and Regulations
- Petroleum Acts and Regulations

In certain circumstances other legislation/regulations will also be relevant including:

- Mining Acts and Regulations
- Submerged Lands Acts and Regulations
- Dangerous Goods Regulations
- Water Drilling Licensing requirements

Where units of competency have been imported from another training package (i.e. the unit code does NOT have the ‘RII’ prefix), the RTO responsible for the assessment should check the assessment guidelines covering those units of competency in their source training package.

***Assessment* considerations**

Some sections of the industry operate in remote areas which are not conducive to multiple visits from assessors. The competency however requires a consistent performance which may not be assessable by a single site visit. The assessment design may therefore need to include other evidence such as:

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- third party report
- range of documentation completed by the candidate (such as drill logs)
- statement of curricular activities verified by the supervisor
- evidence of training undertaken and course outline details

These can be collected/viewed by the assessor to aid in the judgement of consistent performance to the required standard.
Assessing using a formal assessment team in the one place at the one time is often not practical and so the assessor will frequently need to rely on evidence provided by supervisors, other work colleagues, written records and documentation to assist in making the judgement of competency.
Interviews, questioning of the candidate and formal answers to written or oral tests customised and documented by the assessor or RTO may be gathered as evidence for judging competency subject to audit by the RTO issuing the qualification or statement of attainment.
Units of competency have generally been written with a focus on a workplace assessment environment.

Pathways in this training package

Qualifications in this training package may be achieved through a range of implementation methodologies. It is a requirement that all units of competency are assessed based on evidence of the demonstration of competency in the work environment.
In addition to enterprise based delivery, pathways may include:

Qualification Code	Title	Training Pathways
RII10109	Certificate I in Resources and Infrastructure Operations	VET in Schools (including work placement)
RII20109	Certificate II in Resources and Infrastructure Work Preparation	VET in Schools (including work placement)
RII20209	Certificate II in Surface Extraction Operations	Australian Apprenticeship
RII20309	Certificate II in Underground Coal Mining	Australian Apprenticeship
RII20409	Certificate II in Underground Metalliferous Mining	Australian Apprenticeship
RII20509	Certificate II in Resource Processing	Australian Apprenticeship
RII20609	Certificate II in Mining/Field Exploration Operations	Australian Apprenticeship
RII20712	Certificate II in Civil Construction	Australian Apprenticeship
RII20809	Certificate II in Bituminous Surfacing	Australian Apprenticeship

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Qualification Code	Title	Training Pathways
RII20909	Certificate II in Drilling Operations	Australian Apprenticeship
RII21009	Certificate II in Drilling Oil/Gas (Off shore)	Australian Apprenticeship
RII21109	Certificate II in Drilling Oil/Gas (On shore)	Australian Apprenticeship
RII30112	Certificate III in Surface Extraction Operations	Australian Apprenticeship
RII30212	Certificate III in Underground Coal Operations	Australian Apprenticeship
RII30311	Certificate III in Underground Metalliferous Mining	Australian Apprenticeship
RII30411	Certificate III in Resource Processing	Australian Apprenticeship
RII30509	Certificate III in Mining Exploration	Australian Apprenticeship
RII30611	Certificate III in Small Mining Operations	Australian Apprenticeship
RII30709	Certificate III in Mine Emergency Response and Rescue	Australian Apprenticeship
RII30809	Certificate III in Civil Construction Plant Operations	Australian Apprenticeship
RII30912	Certificate III in Civil Construction	Australian Apprenticeship
RII31209	Certificate III in Civil Foundations	Australian Apprenticeship
RII31609	Certificate III in Trenchless Technology	Australian Apprenticeship
RII31809	Certificate III in Drilling Operations	Australian Apprenticeship
RII31909	Certificate III in Drilling Oil/Gas (Off shore)	Australian Apprenticeship
RII32009	Certificate III in Drilling Oil/Gas (On shore)	Australian Apprenticeship
RII40109	Certificate IV in Surface Extraction Operations	Australian Apprenticeship
RII40212	Certificate IV in Surface Coal Mining (Open Cut Examiner)	Australian Apprenticeship
RII40311	Certificate IV in Metalliferous Mining Operations (Underground)	Australian Apprenticeship
RII40412	Certificate IV in Underground Coal Operations	Australian Apprenticeship

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Qualification Code	Title	Training Pathways
RII40509	Certificate IV in Resource Processing	Australian Apprenticeship
RII40609	Certificate IV in Civil Construction Operations	Australian Apprenticeship
RII40712	Certificate IV in Civil Construction Supervision	Australian Apprenticeship
RII40809	Certificate IV in Civil Construction Design	Australian Apprenticeship
RII40909	Certificate IV in Drilling Operations	Australian Apprenticeship
RII41009	Certificate IV in Drilling Oil/Gas (Off shore)	Australian Apprenticeship
RII41109	Certificate IV in Drilling Oil/Gas (On shore)	Australian Apprenticeship
RII50109	Diploma of Surface Operation Management	Australian Apprenticeship
RII50209	Diploma of Underground Metalliferous Mining Management	Australian Apprenticeship
RII50309	Diploma of Minerals Processing	Australian Apprenticeship
RII50409	Diploma of Civil Construction Management	Australian Apprenticeship
RII50509	Diploma of Civil Construction Design	Australian Apprenticeship
RII50609	Diploma of Drilling Operations	Australian Apprenticeship
RII50709	Diploma of Drilling Oil/Gas (Off shore)	Australian Apprenticeship
RII50809	Diploma of Drilling Oil/Gas (On shore)	Australian Apprenticeship
RII50912	Diploma of Underground Coal Mining Management	Australian Apprenticeship
RII60109	Advanced Diploma of Metalliferous Mining	Australian Apprenticeship
RII60209	Advanced Diploma of Extractive Industries Management	Australian Apprenticeship
RII60312	Advanced Diploma of Underground Coal Mining Management	Australian Apprenticeship
RII60409	Advanced Diploma of Drilling Management	Australian Apprenticeship
RII60509	Advanced Diploma of Civil Construction	Australian Apprenticeship

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Qualification Code	Title	Training Pathways
	Design	
RII60609	Advanced Diploma of Civil Construction	Australian Apprenticeship
RII60709	Advanced Diploma of Surface Coal Mining Management	Australian Apprenticeship

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Mining regulatory authority website details
NSW Department of Department of Minerals and Petroleum www.minerals.nsw.gov.au

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Queensland Department of Environment and Resource Management
http://www.derm.qld.gov.au/
Tasmanian Department of Infrastructure, Energy and Resources, www.mrt.tas.gov.au
Victorian Department of Primary Industries www.dpi.vic.gov.au
Northern Territory Department of Resources — Minerals and Energy
http://www.nt.gov.au/d/Minerals_Energy/
Western Australian Department of Mines and Petroleum http://www.dmp.wa.gov.au/
South Australian Department of Primary Industries and Resources www.pir.sa.gov.au
Waterwell regulatory authority details
Australian Drilling Industry Training Committee Ltd www.aditc.com.au (examining body)
NSW Office of Water http://www.water.nsw.gov.au/Home/default.aspx
NT Department of Natural Resources, Environment, the Arts and Sport www.nreta.nt.gov.au
QLD Department of Environment and Resource Management: http://www.derm.qld.gov.au/
SA Department for Water http://www.waterforgood.sa.gov.au/
TAS Department of Primary Industries, Parks, Water and Environment www.dpiw.tas.gov.au
VIC Department of Sustainability and Environment www.dse.vic.gov.au
Australian Drilling Industry Association www.adia.com.au
***Energy regulatory authority* details** (relevant for Coal Seam Gas drilling and Oil/Gas drilling)
NSW Department of Minerals and Petroleum www.minerals.nsw.gov.au
NSW Office of Water http://www.water.nsw.gov.au/Home/default.aspx
National Offshore Petroleum Standards Authority www.nopsa.gov.au
QLD Department of Environment and Resource Management: http://www.derm.qld.gov.au/
SA Department Primary Industries and Resources www.pir.sa.gov.au
VIC Department of Primary Industries — Energy www.dpi.vic.gov.au
WA Department of Mines and Petroleum http://www.dmp.wa.gov.au/
Department of Resources — Minerals and Energy www.minerals.nt.gov.au

Pathways

The competencies in this Training Package may be attained in a number of ways including through:

- formal or informal education and training
- experiences in the workplace
- general life experience, and/or
- any combination of the above.

Assessment under this Training Package leading to an AQF qualification or Statement of Attainment may follow a learning and assessment pathway, an assessment-only or recognition pathway, or a combination of the two as illustrated in the following diagram.

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Each of these assessment pathways leads to full recognition of competencies held - the critical issue is that the candidate is competent, not how the competency was acquired.
Assessment, by any pathway, must comply with the assessment requirements set out in the Assessment Guidelines of the Training Package, and the AQTF, 2 where relevant, the Australian Qualifications Framework.

Learning and Assessment Pathways

Usually, learning and assessment are integrated, with assessment evidence being collected and feedback provided to the candidate at anytime throughout the learning and assessment process.
Learning and assessment pathways may include structured programs in a variety of contexts using a range of strategies to meet different learner needs. Structured learning and assessment programs could be: group-based, work-based, project-based, self-paced, action learning-based; conducted by distance or e-learning; and/or involve practice and experience in the workplace.
Learning and assessment pathways to suit Australian Apprenticeships have a mix of formal structured training and structured workplace experience with formative assessment activities through which candidates can acquire and demonstrate skills and knowledge from the relevant units of competency.

Credit Pathways

Credit is the value assigned for the recognition of equivalence in content between different types of learning and/or qualifications which reduces the volume of learning required to achieve a qualification.
Credit arrangements must be offered by all RTOs that offer Training Package qualifications. Each RTO must have a systematic institutional approach with clear, accessible and transparent policies and procedures.
competency in this Training Package, and should be recognised regardless of how, when or where they were acquired, provided that the learning is relevant to the unit of competency outcomes.

Recognition of Prior Learning

Recognition of Prior Learning (RPL) is an assessment process which determines the credit outcomes of an individual application for credit.
The availability of Recognition of Prior Learning (RPL) provides all potential learners with access to credit opportunities.
The recognition of prior learning pathway is appropriate for candidates who have previously attained skills and knowledge and who, when enrolling in qualifications, seek to shorten the duration of their training and either continue or commence working. This may include the following groups of people:
existing workers;
individuals with overseas qualifications;
recent migrants with established work histories;
people returning to the workplace; and
people with disabilities or injuries requiring a change in career.

As with all assessment, RPL assessment should be undertaken by academic or teaching staff with expertise in the subject, content of skills area, as well as knowledge of and expertise in RPL assessment policies and procedures.

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Assessment methods used for RPL should provide a range of ways for individuals to demonstrate that they have met the required outcomes and can be granted credit. These might include:
questioning (oral or written)
consideration of a portfolio and review of contents
consideration of third party reports and/or other documentation such as documentation such as articles, reports, project material, papers, testimonials or other products prepared by the RPL applicant that relate to the learning outcomes of the relevant qualification component
mapping of learning outcomes from prior formal or non-formal learning to the relevant qualification components
observation of performance, and
participation in structured assessment activities the individual would normally be required to undertake if they were enrolled in the qualification component/s.

In a Recognition of Prior Learning (RPL) pathway, the candidate provides current, quality evidence of their competency against the relevant unit of competency. This process may be directed by the candidate and verified by the assessor. Where the outcomes of this process indicate that the candidate is competent, structured training is not required. The RPL requirements of the AQTF must be met.
As with all assessment, the assessor must be confident that the evidence indicates that the candidate is currently competent against the endorsed unit of competency. This evidence may take a variety of forms and might include certification, references from past employers, testimonials from clients, work samples and/or observation of the candidate. The onus is on candidates to provide sufficient evidence to satisfy assessors that they currently hold the relevant competencies. In judging evidence, the assessor must ensure that the evidence of prior learning is:
authentic (the candidate"s own work);
valid (directly related to the current version of the relevant endorsed unit of competency);
reliable (shows that the candidate consistently meets the endorsed unit of competency);
current (reflects the candidate"s current capacity to perform the aspect of the work covered by the endorsed unit of competency); and
sufficient (covers the full range of elements in the relevant unit of competency and addresses the four dimensions of competency, namely task skills, task management skills, contingency management skills, and job/role environment skills).

Credit Transfer

Credit transfer is a process which provides learners with agreed and consistent credit outcomes based on equivalences in content between matched qualifications.
This process involves education institutions:
mapping, comparing and evaluating the extent to which the defined learning outcomes and assessment requirements of the individual components of one qualification are equivalent to the learning outcomes and assessment requirements of the individual components of another qualification
making an educational judgment of the credit outcomes to be assigned between the matched components of the two qualifications
setting out the agreed credit outcomes in a documented arrangement or agreement, and publicising the arrangement/agreement and credit available.

Combination of Pathways

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Credit may be awarded on the basis of a combination of credit transfer plus an individual RPL assessment for additional learning. Once credit has been awarded on the basis of RPL, subsequent credit transfer based on these learning outcomes should not include revisiting the RPL assessment but should be based on credit transfer or articulation or other arrangements between providers.

Where candidates for assessment have gained competencies through work and life experience and gaps in their competence are identified, or where they require training in new areas, a combination of pathways may be appropriate.

In such situations, the candidate may undertake an initial assessment to determine their current competency. Once current competency is identified, a structured learning and assessment program ensures that the candidate acquires the required additional competencies identified as gaps.

Assessor Requirements

This section identifies the specific requirements on the vocational competence and experience for assessors, to ensure that they meet the needs of industry and their obligations under AQTF, and clarifies how others may contribute to the assessment process where one person alone does not hold all the required competencies.

Assessor Competencies

The AQTF specifies mandatory competency requirements for assessors. For information, Element 1.4 from the AQTF 2007 *Essential Standards for Registration* follows:

1.4		Training and assessment is delivered by trainers and assessors who:
	a)	have the necessary training and assessment competencies as determined by the National Quality Council or its successors, and
	b)	have the relevant vocational competencies at least to the level being delivered or assessed, and
	c)	can demonstrate current industry skills directly relevant to the training/assessment being undertaken, and
	d)	continue developing their Vocational Education and Training (VET) knowledge and skills as well as their industry currency and trainer/assessor competence. * See AQTF 2010 *Users" Guide to the Essential Standards for Registration* Appendix 2

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Designing Assessment Tools
This section provides an overview on the use and development of assessment tools.
Use of Assessment Tools
Assessment tools provide a means of collecting the evidence that assessors use in making judgments about whether candidates have achieved competency.
There is no set format or process for the design, production or development of assessment tools. Assessors may use prepared assessment tools, such as those specifically developed to support this Training Package, or they may develop their own.
Using Prepared Assessment Tools
If using prepared assessment tools, assessors should ensure these relate to the current version of the relevant unit of competency. The current unit of competency can be checked on the National Register <www.ntis.gov.au>.
Developing Assessment Tools
When developing assessment tools, assessors must ensure that they:
- are benchmarked against the relevant unit or units of competency
- are reviewed as part of the continuous improvement of assessment strategies as required under Standard 1 of the AQTF 2007
- meet the assessment requirements expressed in Standard 1 of the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

A key reference for assessors developing assessment tools is TAE10 Training and Education Training Package.
Language, Literacy and Numeracy
The design of assessment tools must reflect the language, literacy and numeracy competencies required for the performance of a task in the workplace and not exceed these expectations.
Conducting Assessment
This section details the mandatory assessment requirements and provides information on equity in assessment including reasonable adjustment.
Mandatory Assessment Requirements
Assessments must meet the criteria set out in the 2010 *Essential Standards for Initial and Continuing Registration*. For information, the mandatory assessment requirements from Standard 1 from the AQTF 2010 *Essential Standards for Initial and Continuing Registration* are as follows:

1.5		Assessment, including Recognition of Prior Learning:
	a)	meets the requirements of the relevant Training Package or accredited course,
	b)	is conducted in accordance with the principles of assessment and the rules of evidence, and
	c)	meets workplace and, where relevant, regulatory requirements.
	d)	is systematically validated.

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Assessment of Employability Skills

Employability Skills are integral to workplace competency. As such they must be considered in the design, customisation, delivery and assessment of vocational education and training programs in an integrated and holistic way, as represented diagrammatically below.

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Employability Skills are embedded and explicit within each unit of competency, and an Employability Skills Summary is available for each qualification. Training providers must use Employability Skills information in order to design valid and reliable training and assessment strategies. This analysis could include:

- reviewing units of competency to locate relevant Employability Skills and determine how they are applied within the unit
- analysing the Employability Skills Summary for the qualification in which the unit or units are packaged to help clarify relevant industry and workplace contexts and the application of Employability Skills at that qualification outcome
- designing training and assessment to address Employability Skills requirements.

The National Quality Council has endorsed a model for assessing and reporting Employability Skills, which contains further suggestions about good practice strategies in teaching, assessing, learning and reporting Employability Skills. The model is available from <http://www.training.com.au/>.

The endorsed approach includes learners downloading qualification specific Employability Skills Summaries for Training Package qualifications from an online repository at <http://employabilityskills.training.com.au>

For more information on Employability Skills in SkillsDMC (Resources and Infrastructure Industry Skills Council) Training Packages go to the SkillsDMC (Resources and Infrastructure Industry Skills Council) website at http://www.skillsdmc.com.au.

Employability Skills are reported on each qualification using the following statement on the qualification testamur: "A summary of the Employability Skills developed through this qualification can be downloaded from http://employabilityskills.training.com.au "

Access and Equity

An individual"s access to the assessment process should not be adversely affected by restrictions placed on the location or context of assessment beyond the requirements specified in this Training Package: training and assessment must be bias-free.

Under the rules for their development, Training Packages must reflect and cater for the increasing diversity of Australia"s VET clients and Australia"s current and future workforce. The flexibilities offered by Training Packages should enhance opportunities and potential outcomes for all people so that we can all benefit from a wider national skills base and a shared contribution to Australia"s economic development and social and cultural life.

Reasonable adjustments

It is important that education providers take meaningful, transparent and reasonable steps to consult, consider and implement reasonable adjustments for students with disability.

Under the *Disability Standards for Education 2005*, education providers must make reasonable adjustments for people with disability to the maximum extent that those adjustments do not cause that provider unjustifiable hardship. While "reasonable adjustment" and "unjustifiable hardship" are different concepts and involve different considerations, they both seek to strike a balance between the interests of education providers and the interests of students with and without disability.

An adjustment is any measure or action that a student requires because of their disability, and which has the effect of assisting the student to access and participate in education and training on the same basis as students without a disability. An adjustment is reasonable if it achieves this purpose while taking into account factors such as the nature of the student"s disability, the views of the student, the potential effect of the adjustment on the student and others who might be affected, and the costs and benefits of making the adjustment.

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An education provider is also entitled to maintain the academic integrity of a course or program and to consider the requirements or components that are inherent or essential to its nature when assessing whether an adjustment is reasonable. There may be more than one adjustment that is reasonable in a given set of circumstances; education providers are required to make adjustments that are reasonable and that do not cause them unjustifiable hardship. The Training Package Guidelines provides more information on reasonable adjustment, including examples of adjustments. *Go to* http://www.deewr.gov.au/tpdh/Pages/home.aspx.

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Competency Standards

What is competency?

The broad concept of industry competency concerns the ability to perform particular tasks and duties to the standard of performance expected in the workplace. Competency requires the application of specified skills, knowledge and attitudes relevant to effective participation in an industry, industry sector or enterprise.

Competency covers all aspects of workplace performance and involves performing individual tasks; managing a range of different tasks; responding to contingencies or breakdowns; and, dealing with the responsibilities of the workplace, including working with others. Workplace competency requires the ability to apply relevant skills, knowledge and attitudes consistently over time and in the required workplace situations and environments. In line with this concept of competency Training Packages focus on what is expected of a competent individual in the workplace as an outcome of learning, rather than focussing on the learning process itself.

Competency standards in Training Packages are determined by industry to meet identified industry skill needs. Competency standards are made up of a number of units of competency each of which describes a key function or role in a particular job function or occupation. Each unit of competency within a Training Package is linked to one or more AQF qualifications.

Contextualisation of Units of Competency by RTOs

Registered Training Organisation (RTOs) may contextualise units of competency to reflect local outcomes required. Contextualisation could involve additions or amendments to the unit of competency to suit particular delivery methods, learner profiles, specific enterprise equipment requirements, or to otherwise meet local needs. However, the integrity of the overall intended outcome of the unit of competency must be maintained.

Any contextualisation of units of competency in this endorsed Training Package must be within the bounds of the following advice. In contextualising units of competency, RTOs:

- must not remove or add to the number and content of elements and performance criteria
- may add specific industry terminology to performance criteria where this does not distort or narrow the competency outcomes
- may make amendments and additions to the range statement as long as such changes do not diminish the breadth of application of the competency and reduce its portability, and/or
- may add detail to the evidence guide in areas such as the critical aspects of evidence or resources and infrastructure required where these expand the breadth of the competency but do not limit its use.

Components of Units of Competency

The components of units of competency are summarised below, in the order in which they appear in each unit of competency.

Unit Title

The unit title is a succinct statement of the outcome of the unit of competency. Each unit of competency title is unique, both within and across Training Packages.

Unit Descriptor

The unit descriptor broadly communicates the content of the unit of competency and the skill area it addresses. Where units of competency have been contextualised from units of competency from other endorsed Training Packages, summary information is provided. There may also be a brief second paragraph that describes its relationship with other units of competency, and any licensing requirements.

Employability Skills statement

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A standard Employability Skills statement appears in each unit of competency. This statement directs trainers and assessors to consider the information contained in the Employability Skills Summary in which the unit of competency is packaged.

Prerequisite Units (optional)

If there are any units of competency that must be completed before the unit, these will be listed.

Application of the Unit

This sub-section fleshes out the unit of competency's scope, purpose and operation in different contexts, for example, by showing how it applies in the workplace.

Competency Field (Optional)

The competency field either reflects the way the units of competency are categorised in the Training Package or denotes the industry sector, specialisation or function. It is an optional component of the unit of competency.

Sector (optional)

The industry sector is a further categorisation of the competency field and identifies the next classification, for example an elective or supervision field.

Elements of Competency

The elements of competency are the basic building blocks of the unit of competency. They describe in terms of outcomes the significant functions and tasks that make up the competency.

Performance Criteria

The performance criteria specify the required performance in relevant tasks, roles, skills and in the applied knowledge that enables competent performance. They are usually written in passive voice. Critical terms or phrases may be written in bold italics and then defined in range statement, in the order of their appearance in the performance criteria.

Required Skills and Knowledge

The essential skills and knowledge are either identified separately or combined. Knowledge identifies what a person needs to know to perform the work in an informed and effective manner. Skills describe the application of knowledge to situations where understanding is converted into a workplace outcome.

Range Statement

The range statement provides a context for the unit of competency, describing essential operating conditions that may be present with training and assessment, depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts. As applicable, the meanings of key terms used in the performance criteria will also be explained in the range statement.

Evidence Guide

The evidence guide is critical in assessment as it provides information to the Registered Training Organisation (RTO) and assessor about how the described competency may be demonstrated. The evidence guide does this by providing a range of evidence for the assessor to make determinations, and by providing the assessment context. The evidence guide describes:

- conditions under which competency must be assessed including variables such as the assessment environment or necessary equipment
- relationships with the assessment of any other units of competency
- suitable methodologies for conducting assessment including the potential for workplace simulation

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- resource implications, for example access to particular equipment, infrastructure or situations
- how consistency in performance can be assessed over time, various contexts and with a range of evidence, and expectations at the AQF qualification level involved

Employability Skills in units of competency

The detail and application of Employability Skills facets will vary according to the job-role requirements of each industry. In developing Training Packages, industry stakeholders are consulted to identify appropriate facets of Employability Skills which are incorporated into the relevant units of competency and qualifications.

Employability Skills are not a discrete requirement contained in units of competency (as was the case with Key Competencies). Employability Skills are specifically expressed in the context of the work outcomes described in units of competency and will appear in elements, performance criteria, range statements and evidence guides. As a result, users of Training Packages are required to review the entire unit of competency in order to accurately determine Employability Skills requirements.

How Employability Skills relate to the Key Competencies

The eight nationally agreed Employability Skills now replace the seven Key Competencies in Training Packages. Trainers and assessors who have used Training Packages prior to the introduction of Employability Skills may find the following comparison useful.

Employability Skills	**Mayer Key Competencies**
Communication	Communicating ideas and information
Teamwork	Working with others and in teams
Problem solving	Solving problems Using mathematical ideas and techniques
Initiative and enterprise	
Planning and organising	Collecting, analysing and organising information Planning and organising activities
Self-management	
Learning	
Technology	Using technology

When analysing the above table it is important to consider the relationship and natural overlap of Employability Skills. For example, using technology may involve communication skills and combine the understanding of mathematical concepts.

Explicitly embedding Employability Skills in units of competency

This Training Package seeks to ensure that industry-endorsed Employability Skills are explicitly embedded in units of competency. The application of each skill and the level of detail included in each part of the unit will vary according to industry requirements and the nature of the unit of competency.

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Employability Skills must be both explicit and embedded within units of competency. This means that Employability Skills will be:

- embedded in units of competency as part of the other performance requirements that make up the competency as a whole
- explicitly described within units of competency to enable Training Packages users to identify accurately the performance requirements of each unit with regards to Employability Skills.

This Training Package also seeks to ensure that Employability Skills are well-defined and written into units of competency so that they are apparent, clear and can be delivered and assessed as an essential component of unit work outcomes.

The following table contains examples of embedded Employability Skills for each component of a unit of competency. Please note that in the examples below the bracketed skills are provided only for clarification and will not be present in units of competency within this Training Package.

Example Employability Skills unit

Unit component	**Example of embedded Employability Skill**
Unit Title	RIIMEX201A Suppress dust in open cut environment
Unit Descriptor	This unit covers suppressing of dust in an open cut environment in the coal and metalliferous mining and extractive industries. It includes applying dust suppressant and minimising dust creation
Element	1 Apply dust suppressant
Performance Criteria	1 Access, interpret and apply ***compliance documentation*** relevant to suppressing of dust in an open cut environment 2 Receive, interpret and clarify shift changeover details 3 Select appropriate ***dust suppression*** method according to site conditions 4 Distribute dust suppressant in appropriate pattern according to road type 5 Adjust dust suppression activities according to schedule and weather conditions 6 Identify, address and report ***environmental issues*** 7 Communicate with other personnel using approved communication methods 8 Adhere to emergency procedures to ensure safety of personnel, plant and equipment
Range Statement	**Relevant compliance documentation**

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	may include: • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Required Skills and Knowledge	**Required Skills** Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to suppress dust in open cut environment: • apply legislative, organisation and site requirements and procedures • make decisions • direct and signal • clean equipment • maintain equipment • operate equipment • follow instructions • identify hazards • interpret plans, reports, maps, specifications • maintain records • follow safe work practices • troubleshoot • wear protective equipment **Required Knowledge**

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	Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to suppress dust in open cut environment: • emergency procedures • environmental aspects • equipment processes, technical capability and limitations
	• equipment safety requirements • geological and technical data (rock formation) • maintenance procedures • mine operation system • OHS procedures • plan terminology • site procedures (operational and maintenance) • site safety requirements • sprinkler operation • water truck operation

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Evidence Guide	**Critical aspects for assessment and evidence required to demonstrate competency in this unit** The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for suppressing of dust in open cut environment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the suppressing of dust in open cut environment • working with others to suppress dust in open cut environment that meets all of the required outcomes • consistent timely suppressing of dust in open cut environment that safely, effectively and efficiently meets the required outcomes

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RII10109 Certificate I in Resources and Infrastructure Operations

Modification History

Not applicable.

Description

The Certificate I in Resources and Infrastructure Operations is an introductory qualification aimed at individuals entering the resources and infrastructure industry. It allows individuals to develop basic skills and knowledge to prepare for work. They may undertake a range of simple tasks under close supervision. The range of technical skills and knowledge is limited.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.	
Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time

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	• understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of six (6) units of competency made up of:

- two (2) Core units, and
- four (4) elective units of which:
- up to four (4) from the Group A electives listed below
- up to one (1) unit may come from AQF level I, II or III in this, or any other, Training Package or accredited course*

Units of competency chosen must:

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIICOM201A	Communicate in the workplace
RIIOHS201A	Work safely and follow OHS policies and procedures
Group A electives	
Unit code	*Unit title*
BSBITU101A	Operate a personal computer
BSBSUS201A	Participate in environmentally sustainable work practices
HLTFA301C	Apply first aid
RIIBEF201B	Plan and organise work
RIICCM201A	Carry out measurements and calculations
RIICCM203A	Read and interpret plans and specifications
RIIENV201A	Identify and assess environmental and heritage concerns
RIIQUA201A	Maintain and monitor site quality standards

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RIIRIS201B	Conduct local risk control
RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
RIISAM203B	Use hand and power tools
RIISAM204B	Operate small plant and equipment
RIISTD201A	Read and interpret maps
RIISTD202A	Collect routine site samples

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RII20109 Certificate II in Resources and Infrastructure Work Preparation

Modification History

Not applicable.

Description

This qualification reflects the roles of individuals who perform mainly routine tasks and procedures, using limited practical skills and fundamental operational knowledge, and taking some responsibility for the quality of the work outcomes.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of eight (8) units of competency made up of:

- two (2) Core units, and
- six (6) elective units of which:
- at least three (3) must come from the Group A electives or Group B high risk work electives listed below
- up to two (2) from the Group C electives listed below
- up to one (1) unit may come from AQF level I, II or III in this, or any other, Training Package or accredited course.

Units of competency chosen must:

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.

There are both licensed and non-licensed units of competency relating to high risk work in the RII09 Resources and Infrastructure Industry Training Package. To be appointed under any statutory requirements in related roles, units of competency should be demonstrated to meet the state/territory licensing requirements. State/territory licensing requirements need to be confirmed by the Registered Training Organisation delivering and/or assessing the competency.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIOHS201A	Work safely and follow OHS policies and procedures
RIIRIS201B	Conduct local risk control
Group A electives	
Unit code	*Unit title*
RIICCM201A	Carry out measurements and calculations
RIIERR201A	Conduct fire team operations
RIIHAN201A	Operate a forklift
RIIHAN208A	Perform dogging

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RIIHAN209A	Perform basic rigging
RIIHAN211A	Conduct basic scaffolding operations
RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
RIISAM202A	Isolate and access plant
RIISAM203B	Use hand and power tools
RIISAM205A	Cut, weld and bend materials
RIISAM207A	Apply operational maintenance skills
RIISTD201A	Read and interpret maps
RIIVEH201B	Operate light vehicle
Group B High risk work electives	
Unit code	*Unit title*
CPCCLDG3001A	Licence to perform dogging
CPCCLRG3001A	Licence to perform rigging basic level
CPCCLSF2001A	Licence to erect, alter and dismantle scaffolding basic level
Group C electives	
Unit code	*Unit title*
BSBITU101A	Operate a personal computer
BSBSUS201A	Participate in environmentally sustainable work practices
HLTFA301C	Apply first aid
RIIBEF201B	Plan and organise work
RIICCM203A	Read and interpret plans and specifications
RIICOM201A	Communicate in the workplace
RIIENV201A	Identify and assess environmental and heritage concerns
RIIGOV201A	Comply with site work processes/procedures

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RIIOHS202A	Enter and work in confined spaces
RIIOHS204A	Work safely at heights
RIIQUA201A	**Maintain and monitor site quality standards**

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RII20209 Certificate II in Surface Extraction Operations

Modification History

Not applicable.

Description

This qualification reflects the role of individuals working as an operator on sites such as an open cut coal mine, a quarry or an open cut metalliferous mine, undertaking a prescribed range of tasks involving known routines and procedures, and taking some responsibility for the quality of work outcomes.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of nine (9) units of competency made up of:

- five (5) Core units, and
- four (4) elective units of which:
- at least two (2) must come from the Group A electives listed below
- up to two (2) from the Group B electives listed below, or from AQF level II or III in this, or any other, Training Package or accredited courses

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.**Core units of competency**	
Unit code	*Unit title*
BSBSUS201A	Participate in environmentally sustainable work practices
RIICOM201A	Communicate in the workplace
RIIOHS201A	Work safely and follow OHS policies and procedures
RIIRIS201B	Conduct local risk control
	And either
RIIQUA201A	Maintain and monitor site quality standards
	OR

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RIIGOV201A	Comply with site work processes/procedures (Coal)
Group A electives	
Unit code	*Unit title*
RIIERR205A	Apply initial response first aid
RIIERR302A	Respond to local emergencies and incidents
RIIENV202A	Suppress airborne contaminants
RIIMCO202A	Conduct mobile slew conveyor operations
RIIMEX202A	Install open-cut mine ground support
RIIMEX203B	Break oversize rock
RIIMEX204A	Conduct workboat/barge operations
RIIMPO203A	Support bucket wheel system operations
RIIMPO204A	Conduct conveyor shifting dozer operations
RIIMPO205B	Operate roller/compactor
RIIMPO206B	Conduct bulk water truck operations
RIIMPO208A	Operate support equipment
RIIMPO311A	Conduct haul truck operations
RIIPEO201B	Conduct conveyor operations
RIIPEO202A	Provide deck support for conveyor-car high wall mining operations
RIIPEO203B	Conduct stacker operations
RIIPEO206A	Lay and recover cables and hoses
RIIPRO201A	Conduct crushing operations
RIIPRO202A	Conduct screening and conveying operations
RIIPRO203A	Operate programmable logic control systems
RIIPRO205A	Conduct blending plant operations
RIISAM202A	Isolate and access plant

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RIISAM214A	Provide support to electrical tradesperson
RIISRM302B	Conduct stockpile reclaiming operations
RIIVEH201B	Operate light vehicle
RIIWMG201A	Conduct dewatering activities in surface operations
Group B electives	
Unit code	*Unit title*
BSBITU101A	Operate a personal computer
RIIBEF201B	Plan and organise work
RIIBEF202A	Identify and rectify site operating problems
RIIBLA203B	Conduct mobile mixing of explosives
RIIBLA205A	Store, handle and transport explosives
RIICCM208A	Carry out basic levelling
RIIENV201A	Identify and assess environmental and heritage concerns
RIIERR201A	Conduct fire team operations
RIIHAN201A	Operate a forklift
RIIHAN203A	Conduct lifting operations
RIIHAN206A	Transport plant, equipment and personnel
RIIHAN208A	Perform dogging
RIIHAN209A	Perform basic rigging
RIIHAN210A	Perform intermediate rigging operations
RIIHAN211A	Conduct basic scaffolding operations
RIIHAN212A	Conduct non-slewing crane operations
RIIOHS202A	Enter and work in confined spaces
RIIOHS204A	Work safely at heights
RIISAM205A	Cut, weld and bend materials

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RIISAM207A	Apply operational maintenance skills
RIISAM208A	Perform plant operational maintenance
RIISAM210A	Remove and fit wheel assemblies
RIISAM211B	Remove, repair and refit tyres and tubes
RIISAM212A	Service mine plant and equipment
RIISAM213A	Position and set up mobile lighting
RIISAM302A	Service and handover plant and machines
RIISTD202A	Collect routine site samples
RIIVEH202A	Operate a medium vehicle
AHCNAR201A	Carry out natural area restoration works
AHCSAW201A	Conduct erosion and sediment control activities
AHCNAR303A	Implement revegetation works
AHCSAW301A	Construct conservation earthworks
TLID2022A	Conduct weighbridge operations

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RII20309 Certificate II in Underground Coal Mining

Modification History

Inclusion of RIIBLA204A Store, handle and transport explosives in underground coal mines which was previously omitted.

Description

This qualification reflects the role of an individual working as an operator in an underground coal mine, who performs a range of mainly routine tasks using limited practical skills and fundamental operational knowledge, in a defined context working under direct supervision.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of ten (10) units of competency made up of:

- five (5) Core units, and
- five (5) elective units of which:
- at least four (4) must come from the Group A electives listed below
- up to one (1) from the Group B electives listed below, or from AQF level II or III in this, or any other, Training Package

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIICOM201A	Communicate in the workplace
RIIERR203B	Escape from hazardous situation unaided
RIIOHS201A	Work safely and follow OHS policies and procedues
RIIGOV201A	Comply with site work processes/procedures
RIIRIS201B	Conduct local risk control
Group A electives	
Unit code	*Unit title*
RIIERR205A	Apply initial response first aid
RIIMCU201A	Operate power tram
RIIMCU202A	Conduct tracked vehicle/plant operations
RIIMCU203A	Conduct wheeled vehicle operations (non-articulated)
RIIMCU204A	Conduct wheeled vehicle operations (articulated)
RIIMCU205A	Conduct rotational drilling
RIIMCU206A	Install, maintain and recover gas drainage systems
RIIMCU207A	Install, maintain and recover electrical services

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RIIMCU208A	Conduct basic strata control operations
RIIMCU209A	Conduct roadway maintenance
RIIMCU210A	Conduct stonedusting operations
RIIMCU211A	Install and maintain explosion barriers
RIIMCU212A	Construct and maintain basic ventilation devices
RIIMCU213A	Conduct feeder breaker operations
RIIMCU214A	Conduct face ventilation operations
RIIMCU215A	Operate longwall ancillary equipment
RIIMCU216A	Maintain lamp cabin operations
RIIMCU402A	Apply spontaneous combustion management measures
RIIMPO208A	Operate support equipment
RIIMPO307B	Conduct wheel grader operations in underground mines
RIINHB304B	Conduct air drilling
RIIPEO202A	Provide deck support for conveyor-car high wall mining operations
RIIPEO208A	Extend, retract and maintain conveyor componentry
RIIUND201A	Install, maintain and recover reticulation systems
RIIUND206A	Install hand held underground ground support
RIIUND207A	Conduct underground lifting operations
RIIUND208A	Conduct skip operations
RIIUND209A	Operate automated winder
RIIUND301A	Operate manual winder
RIIUND302A	Conduct cage operations
RIIUND303A	Operate winder for shaft sinking
RIIWMG202A	Conduct dewatering activities in underground mining operations
Group B electives	

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Unit code	*Unit title*
BSBITU101A	Operate a personal computer
BSBPUR301B	Purchase goods and services
BSBSUS201A	Participate in environmentally sustainable work practices
ICAICT308A	Use advanced features of computer applications
RIIBLA202B	Support underground shotfiring operations
RIIBLA204A	Store, handle and transport explosives in underground coal mines
RIIERR201A	Conduct fire team operations
RIIERR204A	Provide aided rescue to endangered personnel
RIIERR302A	Respond to local emergencies and incidents
RIIHAN201A	Operate a forklift
RIIHAN208A	Perform dogging
RIIHAN209A	Perform basic rigging
RIIHAN210A	Perform intermediate rigging operations
RIIHAN211A	Conduct basic scaffolding operations
RIIHAN212A	Conduct non-slewing crane operations
RIIHAN301B	Operate elevating work platform
RIIHAN302A	Conduct intermediate scaffolding operations
RIIHAN305A	Operate a gantry or overhead crane
RIIHAN307A	Operate a vehicle loading crane
RIIOHS203A	Maintain amenities
RIIQUA201A	Maintain and monitor site quality standards
RIISAM205A	Cut, weld and bend materials
RIISAM207A	Apply operational maintenance skills
RIISAM210A	Remove and fit wheel assemblies

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RIISAM211B	Remove, repair and refit tyres and tubes
RIISAM212A	Service mine plant and equipment
RIISAM214A	Provide support to electrical tradesperson
RIISAM301A	Test operational functions of vehicles and equipment
RIISAM311A	Maintain winder equipment
RIISAM312A	Inspect and maintain shafts and structures
RIISAM313A	Monitor, inspect and service ropes and attachments
RIIVEH201B	Operate light vehicle
RIIVEH202A	Operate a medium vehicle
RIIVEH301A	Conduct rail haulage operations

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RII20409 Certificate II in Underground Metalliferous Mining

Modification History

RIIUND203A code change to RIIUND310 Apply shot-crete underground

Description

This qualification reflects the role of individuals, such as an operator working in an underground metalliferous mine, who perform a range of mainly routine tasks using limited practical skills and fundamental operational knowledge in a defined context, working under direct supervision.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures

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Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of ten (10) units of competency made up of:

- five (5) Core units, and
- five (5) elective units of which:
- at least three (3) must come from the Group A electives listed below
- up to two (2) from the Group B electives listed below
- up to one (1) unit may come from AQF level II or III in this, or any other Training Package.

Units of competency chosen must be relevant to the competency requirements.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBSUS201A	Participate in environmentally sustainable work practices
RIICOM201A	Communicate in the workplace
RIIOHS201A	Work safely and follow OHS policies and procedues
RIIQUA201A	Maintain and monitor site quality standards
RIIRIS201B	Conduct local risk control
Group A electives	
Unit code	*Unit title*
BSBWOR203B	Work effectively with others
RIIBEF202A	Identify and rectify site operating problems
RIIBLA201A	Support shotfiring operations
RIIBLA205A	Store, handle and transport explosives
RIIMPO201A	Operate roller/compactor underground
RIIMPO202A	Undertake towing underground
RIIMPO333	Conduct underground load, haul and dump operations
RIIMPO210A	Conduct underground truck operations

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RIIPEO201B	Conduct conveyor operations
RIISAM203B	Use hand and power tools
RIISAM205A	Cut, weld and bend materials
RIISRM302B	Conduct stockpile reclaiming operations
RIIUMM201A	Install ground support
RIIUMM202A	Install and maintain vent
RIIUMM203A	Prepare and perform manual scaling operations
RIIUMM301A	Conduct wet filling activities
RIIUMM305A	Install and remove a secondary fan
RIIUND201A	Install, maintain and recover reticulation systems
RIIUND202A	Operate from elevated work platform underground
RIIUND310	Apply shot-crete underground
RIIUND204A	Refuel vehicles/machines underground
RIIUND208A	Conduct skip operations
RIIUND209A	Operate automated winder
RIIUND302A	Conduct cage operations
RIIVEH203B	Operate light vehicle underground
RIIWMG202A	Conduct dewatering operations in underground mining operations
Group B electives	
Unit code	*Unit title*
HLTFA301C	Apply first aid
RIIBEF201B	Plan and organise work
RIIBLA202A	Support underground shotfiring operations
RIIBLA203B	Conduct mobile mixing of explosives
RIIERR203B	Escape from a hazardous situation unaided

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RIIERR205A	Apply initial response First Aid
RIIENV202A	Suppress airborne contaminants
RIIHAN201A	Operate a forklift
RIIHAN203A	Conduct lifting operations
RIIHAN206A	Transport plant, equipment and personnel
RIIHAN207A	Operate personnel and materials hoists
RIIHAN208A	Perform dogging
RIIHAN209A	Perform basic rigging
RIIHAN210A	Perform intermediate rigging operations
RIIHAN212A	Conduct non-slewing crane operations
RIIHAN305A	Operate a gantry or overhead crane
RIIMPO332A	Conduct operations with skid steer loader
RIIOHS202A	Enter and work in confined spaces
RIIOHS204A	Work safely at heights
RIISAM202A	Isolate and access plant
RIISAM207A	Apply operational maintenance skills
RIISAM212A	Service mine plant and equipment
RIISAM301A	Test operational functions of vehicles and equipment
RIIVEH306A	Operate mine service vehicle

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RII20509 Certificate II in Resource Processing

Modification History

Not applicable.

Description

This qualification reflects the role of individuals working in a metal processing facility or a coal preparation plant, performing mainly routine, operational tasks using limited practical skills and fundamental operational knowledge, in a defined context under direct supervision.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

Packaging Rules

Requirements for completion of the qualification
The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.
Note about regulations: RIIERR302A is Mandatory in NSW.
Successful completion of ten (10) units of competency made up of:

- five (5) Core units, and
- five (5) elective units of which:
- at least four (4) must come from the Group A electives listed below
- up to one (1) from the Group B electives listed below, or from AQF level II or III level in this, or any other Training Package.

Units of competency chosen must be relevant to the competency requirements for the job function.
Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBSUS201A	Participate in environmentally sustainable work practices
RIICOM201A	Communicate in the workplace
RIIOHS201A	Work safely and follow OHS policies and procedures
RIIRIS201B	Conduct local risk control
	And either
RIIQUA201A	Maintain and monitor site quality standards
	OR

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RIIGOV201A	Comply with site work processes/procedures (Coal)
Group A electives	
Unit code	*Unit title*
MSAPMSUP101A	Clean workplace or equipment
PMAOPS202B	Operate fluid mixing equipment
PMAOPS205B	Operate heat exchangers
PMAOPS206B	Operate separation equipment
PMAOPS207B	Operate powered separation equipment
PMAOPS208B	Operate chemical separation equipment
PMAOPS223B	Operate and monitor valve systems
PMAOPS230B	Monitor, operate and maintain pipeline stations and equipment
PMAOPS307B	Transfer bulk fluids into/out of storage facility
MSL973001A	Perform basic tests
RIIERR302A	Respond to local emergencies and incidents ***(Mandatory in NSW)***
RIIMCP202A	Conduct rail dispatch operations
RIIMEX203B	Break oversize rock
RIIMPG201A	Connect and disconnect reefer units
RIIMPO206B	Conduct bulk water truck operations
RIIMPO208A	Operate support equipment
RIIMPO305B	Conduct coal stockpile dozer operations
RIIMPO306A	Operate plant/machinery on live stockpiles
RIIMPO308B	Conduct tracked dozer operations
RIIMPO331A	Conduct operations with stockpile dozer
RIIPBE201A	Conduct aeration process
RIIPBE202A	Conduct digestion process

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RIIPBE203A	Conduct precipitation operations
RIIPBE204A	Conduct reduction process
RIIPBE205B	Conduct roasting operations
RIIPBP202A	Conduct air cleaning activities
RIIPEO201B	Conduct conveyor operations
RIIPEO203B	Conduct stacker operations
RIIPEO204A	Conduct shore side mooring operations
RIIPEO205A	Conduct ship loading operations
RIIPGP201A	Conduct pump operations
RIIPGP202A	Handle reagents
RIIPGP203A	Operate compressors
RIIPGP204A	Carry out bore-field operations
RIIPGP205A	Handle, store and use cyanide
RIIPHA201A	Operate raw material feed systems
RIIPRE201A	Conduct solvent extraction
RIIPRE202A	Prepare and carry out electrolytic cleaning process
RIIPRE203A	Prepare for sintering activities
RIIPRE204A	Sinter materials
RIIPRO201A	Conduct crushing operations
RIIPRO202A	Conduct screening and conveying operations
RIIPRO204A	Bulk package and store product
RIIPRO205A	Conduct blending plant operations
RIIPRO301C	Conduct crushing and screening plant operations
RIIPSM201A	Tap furnaces
RIIPSM202A	Prepare for pelletising activities

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RIIPSM203A	Produce pellets
RIISRM302B	Conduct stockpile reclaiming operations
RIISAM214A	Provide support to electrical tradesperson
RIIWBP201A	Treat and dispose of rejects and tailings
RIIWBP202A	Distribute tailings
RIIWBP203B	Monitor tailings dam environment
Group B electives	
Unit code	*Unit title*
BSBITU101A	Operate a personal computer
RIIBEF201B	Plan and organise work
RIIENV202A	Suppress airborne contaminants
RIIERR201A	Conduct fire team operations
RIIERR205A	Apply initial response First Aid
RIIHAN201A	Operate a forklift
RIIHAN203A	Conduct lifting operations
RIIHAN204A	Load and unload cargo/goods
RIIHAN205A	Secure cargo
RIIHAN206A	Transport plant, equipment and personnel
RIIHAN208A	Perform dogging
RIIHAN209A	Perform basic rigging
RIIHAN210A	Perform intermediate rigging operations
RIIHAN212A	Conduct non-slewing crane operations
RIIMCP301A	Monitor coal preparation plant operations
RIIOHS202A	Enter and work in confined spaces
RIIOHS204A	Work safely at heights

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RIIPBP302A	Control acid plant operations
RIISAM202A	Isolate and access plant
RIISAM205A	Cut, weld and bend materials
RIISAM207A	Apply operational maintenance skills
RIISAM208A	Perform plant operational maintenance
RIISAM212A	Service mine plant and equipment
RIISTD202A	Collect routine site samples

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RII20609 Certificate II in Mining Field/Exploration Operations

Modification History

Not applicable.

Description

This qualification reflects the role of an employee working in a mining exploration team or working as a pit technician, who undertakes a prescribed range of functions involving known routines and procedures and who takes some responsibility for the quality of work outcomes.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of fourteen (14) units of competency made up of:

- ten (10) Core units, and
- four (4) elective units of which:
- at least two (2) must come from the Group A electives listed below
- up to two (2) from the Group B electives listed below
- up to one (1) unit may come from AQF level II or III level in this, or any other Training Package or accredited course.

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIOHS201A	Work safely and follow OHS policies and procedures
RIIENV201A	Identify and assess environmental and heritage concerns
HLTFA301C	Apply first aid
RIICOM201A	Communicate in the workplace
RIIEGS201A	Operate in isolated and remote situations
RIIEGS202B	Conduct field work
RIIQUA201A	Maintain and monitor site quality standards
RIIRIS201B	Conduct local risk control
RIISTD202A	Collect routine site samples
RIIVEH305A	Operate and maintain a four wheel drive vehicle
Group A electives	
Unit code	*Unit title*

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CPPSIS3016A	Provide field support services
AHCNAR303A	Carry out natural area restoration works
RIIEGS301A	Operate and maintain instruments and field equipment
RIIEGS304A	Mobilise equipment and materials
RIIEGS305B	Navigate in a remote or trackless areas
AHCSAW201A	Conduct erosion and sediment control activities
AHCNAR303A	Implement revegetation works
AHCSAW301A	Construct conservation earthworks
Group B electives	
Unit code	*Unit title*
BSBITU101A	Operate a personal computer
BSBSUS201A	Participate in environmentally sustainable work practices
HLTFA402C	Apply advanced first aid

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RII20712 Certificate II in Civil Construction

Modification History

Not applicable.

Description

This qualification reflects the role of individuals working in an operational role in civil construction, who undertake a prescribed range of tasks using limited practical skills and fundamental knowledge, in a defined context working under supervision.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of sixteen (16) units of competency made up of:

- ten (10) Core units, and
- six (6) elective units of which:
- at least three (3) must come from the Group A electives listed below
- up to three (3) may come from AQF level II or III from this, or any other Training Package
- up to (2) may come from an accredited course at AQF II or III level

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package

There are both licenced and non-licenced units of competency relating to high risk work in the RII09 Resources and Infrastructure Training Package. To be appointed under any statutory requirements in related roles, units of competency should be demonstrated to meet the state/territory licensing requirements. State/territory licensing requirements need to be confirmed by the Registered Training Organisation delivering and/or assessing the competency.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIBEF201B	Plan and organise work
RIICCM201A	Carry out measurements and calculations
RIICCM202A	Identify, locate and protect underground services
RIICCM203A	Read and interpret plans and specifications
RIICCM205A	Carry out manual excavation
RIICCM207A	Spread and compact materials manually
RIICOM201A	Communicate in the workplace

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RIIOHS201A	Work safely and follow OHS policies and procedures
RIISAM203B	Use hand and power tools
RIISAM204B	Operate small plant and equipment
Group A	
Unit code	*Unit title*
CPCCCM2007B	Use explosive power tools
CPCCLDG3001A	Licence to perform dogging
CPCCLRG3001A	Licence to perform rigging basic level
CPCCLSF2001A	Licence to erect, alter and dismantle scaffolding basic level
FPICOT2239A	Trim and cut felled trees
FPIFGM3212	Fall trees manually - intermediate
RIICBS202A	Hand spread asphalt
RIICCM206A	Support plant operations
RIICCM208A	Carry out basic levelling
RIICCM209A	Carry out concrete work
RIICCM210A	Install trench support
RIICCM211A	Erect and dismantle temporary fencing and gates
RIICFW306A	Direct pile driving operations
RIICFW307A	Direct cast in-situ piling operations
RIICRC201A	Repair potholes
RIICRC208A	Lay pipes
RIIHAN211A	Conduct basic scaffolding operations
RIIHAN301B	Operate elevating work platform
RIIOHS202A	Enter and work in confined spaces
RIIOHS205A	Control traffic with stop-slow bat

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RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
RIISAM205A	Cut, weld and bend materials
RIIWMG203A	Drain and dewater civil construction site
Group B High risk work electives	
Unit code	*Unit title*
CPCCLDG3001A	Licence to perform dogging
CPCCLRG3001A	Licence to perform rigging – basic level
CPCCLSF2001A	Licence to erect, alter and dismantle scaffolding – basic level

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RII20809 Certificate II in Bituminous Surfacing

Modification History

Not applicable.

Description

This qualification reflects the role of individuals working in bituminous surfacing in the civil construction industry, performing routine tasks using practical skills and fundamental operational knowledge in a defined context, working under direct supervision.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of sixteen (16) units of competency made up of:

- ten (10) Core units, and
- six (6) elective units of which:
- at least five (5) must come from the Group A electives listed below
- up to one (1) unit may come from AQF level II III from this, or any other, Training Package or accredited course.

Units of competency chosen must:

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIICBS201A	Conduct tack coat spraying operations
RIICBS203A	Safely handle bituminous materials
RIICCM201A	Carry out measurements and calculations
RIICCM203A	Read and interpret plans and specifications
RIICCM207A	Spread and compact materials manually
RIICOM201A	Communicate in the workplace
RIIOHS201A	Work safely and follow OHS policies and procedures
RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
RIISAM203B	Use hand and power tools
RIISAM204B	Operate small plant and equipment
Group A Electives	
Unit code	*Unit title*

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RIIBEF201B	Plan and organise work
RIICBS202A	Hand spread asphalt
RIICBS204A	Conduct aggregate spreader box operations
RIICBS205A	Roll aggregate in sprayed sealing operations
RIICBS206A	Conduct pavement sweeping operations
RIICBS207A	Take samples of materials used in road surfacing
RIICBS208A	Conduct road maintenance operations
RIICBS302A	Conduct paver screeding operations
RIICCM205A	Carry out manual excavation
RIICCM206A	Support plant operations
RIICRC201A	Repair potholes
RIIOHS202A	Enter and work in confined spaces
RIIOHS205A	Control traffic with stop-slow bat

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RII20909 Certificate II in Drilling Operations

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as drillers' assistants who undertake a prescribed range of functions involving known routines and procedures and who take some responsibility for the quality of work outcomes.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of twelve (12) units of competency made up of:

- eight (8) Core units, and
- four (4) elective units of which:
- at least one (1) must come from the Group A electives listed below
- up to three (3) may come from the Group B electives listed below
- up to one (1) unit may come from AQF level II or III from this, or any other, Training Package

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBWOR203B	Work effectively with others
RIICOM201A	Communicate in the workplace
RIIENV201A	Identify and assess environmental and heritage concerns
RIINHB201B	Load, secure and unload drilling equipment and materials
RIINHB202A	Set up/pack up drill site
RIINHB203A	Support drilling process
RIIOHS201A	Work safely and follow OHS policies and procedures
RIIRIS201B	Conduct local risk control
Group A electives	
Unit code	*Unit title*
RIINHB205A	Assist continuous flight auger drilling
RIINHB206A	Assist large diameter auger drilling
RIINHB208B	Assist diamond core drilling
RIINHB209A	Assist guided boring

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RIINHB210B	Assist surface directional drilling
RIINHB211A	Assist mud rotary drilling
RIINHB213A	Assist cable tool drilling
RIINHB216A	Assist underground in-seam directional drilling
RIINHB218A	Assist grouting or cementing operations
RIINHB219A	Assist with air drilling
Group B electives	
Unit code	*Unit title*
HLTFA301C	Apply first aid
RIIERR202A	Contribute to the control of emergencies and critical situations
RIIHAN201A	Operate a forklift
RIIHAN206A	Transport plant, equipment and personnel
RIIHAN307A	Operate a vehicle loading crane
RIIHAN208A	Perform dogging
RIIHAN213A	Work effectively in the drilling industry
RIIOHS204A	Work safely at heights
RIIQUA201A	Maintain and monitor site quality standards
RIISAM202A	Isolate and access plant
RIISAM205A	Cut, weld and bend materials
RIIVEH203B	Operate a light vehicle underground
RIISTD202A	Collect routine site samples
RIIUND206A	Install hand held underground ground support
RIIVEH201B	Operate light vehicle
RIIVEH305A	Operate and maintain a four wheel drive vehicle

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RII21009 Certificate II in Drilling Oil/Gas (Off shore)

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as a floorman, who undertake a prescribed range of functions involving known routines and procedures and who take some responsibility for the quality of work outcomes.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of fifteen (15) units of competency made up of:

- thirteen (13) Core units, and
- two (2) elective units of which:
- at least one (1) must come from the Group A electives listed below
- up to one (1) from the Group B electives listed below
- up to one (1) unit may come from AQF level II or III level from this, or any other, Training Package.

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
MSAPMSUP172A	Identify and minimise environmental hazards
BSBWOR203A	Work effectively with others
RIICOM201A	Communicate in the workplace
RIIERR202A	Contribute to the control of emergencies and critical situations
RIIOGD201A	Assist in maintaining rig safety and emergency procedures
RIIOGD202A	Carry out equipment and basic rig maintenance
RIIOGD203A	Prepare and operate drilling fluid systems
RIIOGD204A	Perform rig floor operations
RIIOHS201A	Work safely and follow OHS policies and procedures
RIIOHS202A	Enter and work in confined spaces
RIIOHS204A	Work safely at heights
RIIQUA201A	Maintain and monitor site quality standards
RIIRIS201B	Conduct local risk control
Group A electives	

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Unit code	*Unit title*
RIIHAN202A	Handle and store cargo
RIIOGF201A	Carry out deck operations
RIIOGF202A	Assist in the transfer of passengers and freight during helicopter operations
Group B electives	
Unit code	*Unit title*
HLTFA301C	Apply first aid
RIIBEF201B	Plan and organise work
RIIHAN205A	Secure cargo
RIISAM203B	Use hand and power tools

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RII21109 Certificate II in Drilling Oil/Gas (On shore)

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as a floorman, who undertake a prescribed range of functions involving known routines and procedures and who take some responsibility for the quality of work outcomes.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of twelve(12) units of competency made up of:

- eight (8) Core units, and
- four (4) elective units of which:
- at least two (2) must come from the Group A electives listed below
- up to two (2) units may come from AQF level II or III from this, or any other, Training Package

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
MSAPMSUP172A	Identify and minimise environmental hazards
RIICOM201A	Communicate in the workplace
RIIERR202A	Contribute to the control of emergencies and critical situations
RIIOGD204A	Perform rig floor operations
RIIOGN201A	Carry out rig lease operations
RIIOHS201A	Work safely and follow OHS policies and procedures
RIIRIS201B	Conduct local risk control
RIISAM209A	Carry out operational maintenance
Group A electives	
Unit code	*Unit title*
HLTFA301C	Apply first aid
MSAPMPER200C	Work in accordance with an issued permit
RIIHAN201A	Operate a forklift
RIIHAN208A	Perform dogging
RIIHAN209A	Perform basic rigging

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RIIHAN307A	Operate a vehicle loading crane
RIIHAN309A	Conduct telescopic materials handler operations
RIIMPO304B	Conduct wheel loader operations
RIIOGD202A	Carry out equipment and basic rig maintenance
RIIOGD205A	Support blow out prevention operations
RIIOGD206A	Assist with coal seam gas control
RIIOHS202A	Enter and work in confined spaces
RIIOHS204A	Work safely at heights
RIISAM205A	Cut, weld and bend materials

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RII30112 Certificate III in Surface Extraction Operations

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as production operators in an open cut mine or quarry, who perform tasks involving a broad range of skilled applications in a varied work context, using some discretion and judgement in selecting equipment, services or contingency measures.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

Packaging Rules

Requirements for completion of the qualification
The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of thirteen (13) units of competency made up of:
five (5) Core units, and
eight (8) elective units of which:
- at least three (3) must come from the Group A electives listed below
- up to three (3) from the Group B electives listed below
- up to two (2) from AQF level II, III or IV from this, or any other, Training Package
Units of competency chosen must be relevant to the competency requirements for the job function.
Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.
The unit RIICOM301B is part of the Communicate information S1, S2, S3 suite of competencies required in Queensland for supervisors in the coal sector.

Core units of competency	
Unit code	*Unit title*
RIIOHS201A	Work safely and follow OHS policies and procedures
RIIENV201A	Identify and assess environmental and heritage concerns
RIIRIS301B	Apply risk management processes
RIICOM302A	Communicate workplace information
	Either
RIIGOV201A	Comply with site work processes/procedures (Coal)
	OR

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RIIQUA201A	Maintain and monitor site quality standards
Group A electives	
Unit code	*Unit title*
MSAPMPER300C	Issue work permits
RIIBHD301A	Conduct surface blast hole drilling operations
RIIBHD304B	Set up and prepare for open cut drilling operations
RIIBHD305	Conduct down-hole hammer drilling
RIIBLA301A	Conduct surface shotfiring operations
RIIMCO301A	Conduct control centre operations
RIIMCO302A	Conduct surface miner operations
RIIMCO303A	Conduct auger miner operations
RIIMEX301A	Conduct dredging operations
RIIMEX302B	Assess ground conditions
RIIMPG301A	Control and monitor automated plant/machinery
RIIMPO206B	Conduct bulk water truck operations
RIIMPO301C	Conduct hydraulic excavator operations
RIIMPO302B	Conduct hydraulic shovel operations
RIIMPO303A	Conduct rope shovel operations
RIIMPO304B	Conduct wheel loader operations
RIIMPO305B	Conduct coal stockpile dozer operations
RIIMPO306A	Operate plant/machinery on live stockpiles
RIIMPO308B	Conduct tracked dozer operations
RIIMPO309A	Conduct wheeled dozer operations
RIIMPO310B	Conduct grader operations
RIIMPO311A	Conduct haul truck operations

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RIIMPO312A	Conduct scraper operations
RIIMPO313B	Conduct face loading operations
RIIMPO329A	Conduct dragline operations
RIIMPO331A	Conduct stockpile dozer operations
RIINHB307B	Conduct conventional core drilling
RIIPEO301A	Conduct conveyor-car high wall mining operations
RIIPRO301C	Conduct crushing and screening plant operations
RIIPRO302A	Perform process control room operations
RIIPRO303A	Conduct sand wash plant operations
RIISAM202A	Isolate and access plant
RIISAM301A	Test operational functions of vehicles and equipment
RIISRM301B	Blend stockpile materials
RIISRM302B	Conduct stockpile reclaiming operations
RIISRM303B	Move and position materials to form stockpiles
RIISRM304B	Maintain stockpiles
RIIVEH201B	Operate light vehicle
RIIVEH307A	Operate heavy rigid vehicle
Group B electives	
Unit code	*Unit title*
BSBINN301A	Promote innovation in a team environment
BSBPUR301B	Purchase goods and services
HLTFA301B	Apply first aid
MSL925001A	Process and interpret data
PMLOHS301B	Work safely with instruments that emit ionizing radiation
PMLORG301A	Plan and conduct laboratory/field work

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MSL973001A	Perform basic tests
RIIBEF302A	Monitor site production activities
RIIBLA201A	Support shotfiring operations
RIIBLA205A	Store, handle and transport explosives
RIIBLA304A	Conduct underground production shotfiring
RIIBLA305A	Conduct secondary blasting
RIIBLA306A	Conduct accretion firing
RIIBLA307A	Conduct blast survey
RIICOM301B	Communicate information
RIICRC310A	Construct and maintain roads
RIIERR301A	Respond to mine incident
RIIERR302A	Respond to local emergencies and incidents
RIIERR308A	Extricate and transport people involved in incidents
RIIERR310A	Provide support for rescue operations
RIIHAN208A	Perform dogging
RIIHAN301B	Operate elevating work platforms
RIIHAN302A	Conduct intermediate scaffolding operations
RIIHAN304A	Conduct slewing crane operations
RIIHAN305A	Operate a gantry or overhead crane
RIIHAN306A	Carry out lifting using multiple cranes
RIIHAN307A	Operate a vehicle loading crane
RIIHAN311A	Conduct operations with integrated tool carrier
RIIOHS301A	Conduct safety and health investigations
RIIPEO206A	Lay and recover cables and hoses
RIISAM303A	Shut down dredge for operator maintenance

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RIISAM304A	Install, commission and maintain major conveyor equipment and systems
RIISAM305A	Repair and splice conveyor belting
RIISAM306A	Service and maintain conveyors, feeders and hoppers
RIISAM307A	Service and maintain crushers
RIISAM308A	Service and maintain screens
RIISAM309A	Service and maintain pumps
RIISTD301A	Take environmental samples and measurements
RIIVEH302A	Operate multi-combination vehicle
RIIVEH303A	Drive heavy combination vehicle
RIIVEH306A	Operate mine services vehicle
AHCNAR303A	Implement revegetation works
AHCSAW301A	Construct conservation earthworks
TLIC3004A	Drive heavy rigid vehicle
TLID2022A	Conduct weighbridge operations

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RII30212 Certificate III in Underground Coal Operations

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as production operators in an underground coal mine, who perform tasks involving a broad range of skilled applications in a varied work context, using some discretion and judgement in selecting equipment, services or contingency measures.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues • identifies and comprehends relevant mathematical information in familiar activities or texts • selects and uses appropriate familiar mathematical problem-solving strategies to solve problems in familiar contexts
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well

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	and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of sixteen (16) units of competency made up of:

- six (6) Core units, and
- ten (10) elective units of which:
- at least five (5) must come from the Group A electives listed below
- up to five (5) from the Group B electives listed below
- up to one (1) unit may come from AQF level II, III or IV from this, or any other, Training Package.

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIICOM302A	Communicate workplace information
RIIERR201A	Conduct fire team operations
RIIGOV201A	Comply with site work processes/procedures
RIIMCU208A	Conduct basic strata control operations
RIIMCU214A	Conduct face ventilation operations
RIIRIS301B	Apply risk management processes
Group A electives	
Unit code	*Unit title*
RIIMCU209A	Conduct roadway maintenance
RIIMCU301A	Conduct specialised strata control operations
RIIMCU302A	Construct and maintain ventilation devices
RIIMCU303A	Conduct continuous miner operations
RIIMCU304A	Conduct shuttle car operations
RIIMCU305A	Conduct outburst mining operations

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RIIMCU306A	Conduct shearer operations
RIIMCU307A	Conduct longwall face equipment operations
RIIMCU308A	Install and recover longwall equipment
RIIMCU309A	Operate breaker line supports
RIIMCU310A	Conduct flexible conveyor train (FCT) operations
RIIMCU311A	Monitor control processes
RIIMCU401A	Conduct special roadway operations
RIIMCU402A	Apply spontaneous combustion management measures
RIINHB304B	Conduct air drilling
RIINHB310A	Conduct surface directional drilling
Group B electives	
Unit code	*Unit title*
RIIBLA302A	Conduct shotfiring operations in underground coal mines
RIICOM301B	Communicate information
RIIENV301A	Conduct atmospheric monitoring
RIIERR203B	Escape from hazardous situation unaided
RIIERR204A	Provide aided rescue to endangered personnel
RIIERR205A	Apply initial response first aid
RIIERR301A	Respond to mine incident
RIIERR302A	Respond to local emergencies and incidents
RIIERR303A	Operate in self-contained regenerative oxygen breathing apparatus
RIIERR304A	Control emergencies and critical situations
RIIERR305A	Control underground fires
RIIERR306A	Conduct underground search
RIIERR307A	Extricate casualties from underground incident

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RIIERR308A	Extricate and transport people involved in incidents
RIIERR309A	Establish and operate from fresh air base
RIIERR310A	Provide support for rescue operations
RIIHAN304A	Conduct slewing crane operations
RIIOHS301A	Conduct safety and health investigations
RIIPEO202A	Provide deck support for conveyor-car high wall mining operations
RIIPEO301A	Conduct conveyor-car high wall mining operations
RIISAM304A	Install, commission and maintain major conveyor equipment and systems
RIISAM305A	Repair and splice conveyor belting
RIISAM311A	Maintain winder equipment
RIISAM312A	Inspect and maintain shafts and structures
RIISAM313A	Monitor, inspect and service ropes and attachments
RIIUND205A	Respond to a workforce incident
RIIUND208A	Conduct skip operations
RIIUND209A	Operate automated winder
RIIUND301A	Operate manual winder
RIIUND302A	Conduct cage operations
RIIUND303A	Operate winder for shaft sinking

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RII30311 Certificate III in Underground Metalliferous Mining

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as production operators in an underground metalliferous mine, who perform tasks involving a broad range of skilled applications in a varied work context, using some discretion and judgement in selecting equipment, services or contingency measures.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of fourteen (14) units of competency made up of:

- six (6) Core units, and
- eight (8) elective units of which:
- at least five (5) must come from the Group A electives listed below
- up to three (3) from the Group B electives listed below
- up to one (1) unit may come from Certificate II, Certificate III or Certificate IV level from this, or any other Training Package

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIOHS201A	Work safely and follow OHS policies and procedures
RIIENV302A	Apply environmentally sustainable work practices
RIICOM302A	Communicate workplace information
RIIMEX302B	Assess ground conditions
RIIQUA201A	Maintain and monitor site quality standards
RIIRIS301B	Apply risk management processes
Group A electives	
Unit code	*Unit title*
BSBFLM305C	Support operational plan
RIIBEF301A	Run on-site operations
RIIBEF401A	Manage non-routine, complex technical situations

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RIIBHD302A	Conduct underground development drilling
RIIBHD303A	Conduct long hole drilling
RIIBLA303A	Conduct underground development shotfiring
RIIBLA304A	Conduct underground production shotfiring
RIIBLA305A	Conduct secondary blasting
RIIERR203B	Escape from hazardous situation unaided
RIIMPG301A	Control and monitor automated plant/machinery
RIIMPO307B	Conduct wheel grader operations in underground mines
RIIMPO333	Conduct underground load, haul and dump truck operations
RIINHB307B	Conduct conventional core drilling
RIINHB310A	Conduct surface directional drilling
RIINHB312A	Conduct raise boring
RIIOHS301A	Conduct safety and health investigation
RIISAM202A	Isolate and access plant
RIISAM306A	Service and maintain conveyors, feeders and hoppers
RIISAM307A	Service and maintain crushers
RIISAM312A	Inspect and maintain shafts and structures
RIISRM302B	Conduct stockpile reclaiming operations
RIIUMM301A	Conduct wet filling activities
RIIUMM302A	Install sets
RIIUMM303A	Conduct hand held mining
RIIUMM304A	Construct and maintain underground roads
RIIUMM305A	Install and remove a secondary fan
RIIUMM306A	Conduct mechanical scaling
RIIUMM307A	Maintain underground stockpiles

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RIIUND205A	Respond to a workforce incident
RIIUND301A	Operate manual winder
RIIUND302A	Conduct cage operations
RIIUND303A	Operate winder for shaft sinking
RIIUND304A	Recover equipment
RIIUND305A	Recover underground equipment
RIIUND306A	Conduct line of sight remote operations
RIIUND307A	Conduct tele-remote operations
RIIUND308A	Conduct control room operations
RIIUND309A	Conduct mechanical underground ground support drilling and installation
RIIVEH306A	Operate mine service vehicle
Group B electives	
Unit code	*Unit title*
BSBINN301A	Promote innovation in a team environment
MSAPMPER300C	Issue work permits
RIIBEF302A	Monitor site production activities
RIIBLA306A	Conduct accretion firing
RIIERR204A	Provide aided rescue to endangered personnel
RIIERR302A	Respond to local emergencies and incidents
RIIHAN304A	Conduct slewing crane operations
RIIHAN306A	Carry out lifting using multiple cranes
RIIHAN309A	Conduct telescopic materials handler operations
RIIHAN310A	Conduct crane operations underground
RIIHAN311A	Conduct operations with integrated tool carrier

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RIIMPO332A	Conduct operations with skid steer loader
RIISAM311A	Maintain winder equipment
RIISAM313A	Monitor, inspect and service ropes and attachments
RIISTD301A	Take environmental samples and measurements
RIIUND310	Apply shot-crete underground
RIIVEH301A	Conduct rail haulage operations

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RII30411 Certificate III in Resource Processing

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as production operators in a metalliferous processing facility or a coal preparation and treatment plant, who perform tasks involving a broad range of skilled applications in a varied work context, using some discretion and judgement in selecting equipment, services or contingency measures.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.
Note about regulations: RIIERR302A and RIIGOV201A are **Mandatory in NSW**
Successful completion of thirteen (13) units of competency made up of:

- five (5) Core units, and
- eight (8) elective units of which:
- at least six (6) must come from the Group A listed below
- up to two (2) from the Group B electives listed below or from Certificate II, Certificate III or Certificate IV level from this, or any other Training Package

Units of competency chosen must be relevant to the competency requirements for the job function.
Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIENV302A	Apply environmentally sustainable work practices
RIICOM201A	Communicate in the workplace
RIIOHS201A	Work safely and follow OHS policies and procedures
RIIRIS301B	Apply risk management processes
	And either
RIIQUA201A	Maintain and monitor site quality standards
	OR

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RIIGOV201A	Comply with site work processes/procedures ***(Coal sector only, Mandatory in NSW)***
Group A electives	
Unit code	*Unit title*
FPPSTM320A	Manage steam boiler startup
FPPSTM330A	Shut down and bank steam boiler
PMAOPS206B	Operate separation equipment
PMAOPS307B	Transfer bulk fluids into/out of storage facility
PMAOPS330B	Communicate pipeline control centre operations
MSAPMPER300C	Issue work permits
RIICOM301B	Communicate information
RIICOM302A	Communicate workplace information
RIIERR302A	Respond to local emergencies and incidents ***(Mandatory in Coal sector in NSW)***
RIIHAN311A	Conduct operations with integrated tool carrier
RIIMCP301A	**Monitor coal preparation plant operations**
RIIMPG301A	Control and monitor automated plant/machinery
RIIMPO304B	Conduct wheel loader operations
RIIMPO305B	Conduct coal stockpile dozer operations
RIIMPO306A	Operate plant/machinery on live stockpiles
RIIMPO308B	Conduct tracked dozer operations
RIIMPO309A	Conduct wheeled dozer operations
RIIMPO310B	Conduct grader operations
RIIMPO311A	Conduct haul truck operations
RIIMPO331A	Conduct stockpile dozer operations
RIIOHS301A	Conduct safety and health investigation

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RIIPBE301A	Conduct calcinations activities
RIIPBE302A	Conduct bacterial oxidation
RIIPBE303B	Conduct filtering process
RIIPBE304B	Conduct heavy media separation
RIIPBE305A	Conduct high tension separation
RIIPBE306A	Conduct leaching process
RIIPBE307A	Conduct pressure oxidation
RIIPBE308B	Conduct thickening and clarifying process
RIIPBE309B	Conduct wet gravity separation
RIIPBE310B	Conduct flotation process
RIIPBE311B	Conduct magnetic separation
RIIPBP301A	Process lime products
RIIPBP302A	Control acid plant operations
RIIPEO201B	Conduct conveyor operations
RIIPEO203B	Conduct stacker operations
RIIPEO205A	Conduct ship loading operations
RIIPEO302	Operate and monitor ore car dumpers
RIIPGP201A	Conduct pump operations
RIIPGP202A	Handle reagents
RIIPGP301A	Conduct drying activities
RIIPGP302A	Monitor and operate auxiliary plant and equipment
RIIPHA301A	Conduct milling/grinding
RIIPHA302A	Operate and monitor filter processes
RIIPRE301A	Conduct electrowinning/electrorefining operations
RIIPRE302A	Conduct elution processes

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RIIPRE303A	Conduct gold room operations
RIIPRE304A	Monitor casting quality
RIIPRO301C	Conduct crushing and screening plant operations
RIIPRO302A	Perform processing control room operations
RIIPSM301A	Cast a blast furnace
RIIPSM302A	Cast ingots
RIIPSM303A	Operate a blast furnace
RIIPSM304A	Operate furnaces
RIIPSM305A	Operate converters
RIIPSM306A	Supply molten metal and additives to furnaces
RIIPSM307A	Control molten metal in holding furnace/vessel
RIIPSM308A	Monitor and maintain furnace gas efficiency
RIIPSM309A	Monitor and maintain flue gas efficiency
RIISAM202A	Isolate and access plant
RIISRM301B	Blend stockpile materials
RIISRM302B	Conduct stockpile reclaiming operations
RIISRM304B	Maintain stockpiles
RIIWBP203B	Monitor tailings dam environment
RIIWMG302A	Reclaim and treat water system
UEPOPS316B	Operate and monitor boiler steam/water cycle
Group B electives	
Unit code	*Unit title*
BSBPUR301B	Purchase goods and services
BSBRKG304B	Maintain business records
PMAOPS223B	Operate and monitor valve systems

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PMAOPS230B	Monitor, operate and maintain pipeline stations and equipment
PMAOPS335A	Conduct pipeline pigging
PMAOPS202B	Operate fluid mixing equipment
PMAOPS205B	Operate heat exchangers
PMAOPS207B	Operate powered separation equipment
PMAOPS208B	Operate chemical separation equipment
PMLOHS301B	Work safely with instruments that emit ionizing radiation
RIIBLA306A	Conduct accretion firing
RIIERR205A	Apply initial response First Aid
RIIERR301A	Respond to mine incident
RIIERR302A	Respond to local emergencies and incidents
RIIERR303A	Operate in self-contained regenerative oxygen breathing apparatus
RIIERR308A	Extricate and transport people involved in incidents
RIIHAN305A	Operate a gantry or overhead crane
RIIHAN307A	Operate a vehicle loading crane
RIIMCP202A	Conduct rail dispatch operations
RIIMEX203B	Break oversize rock
RIIMPG201A	Connect and disconnect reefer units
RIIMPO206B	Conduct bulk water truck operations
RIIMPO208A	Operate support equipment
RIIMPO332A	Conduct operations with skid steer loader
RIIOHS202A	Enter and work in confined spaces
RIIOHS204A	Work safely at heights
RIIPBE201A	Conduct aeration process
RIIPBE202A	Conduct digestion process

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RIIPBE203A	Conduct precipitation operations
RIIPBE204A	Conduct reduction process
RIIPBE205B	Conduct roasting operations
RIIPBP202A	Conduct air cleaning activities
RIIPEO204A	Conduct shore side mooring operations
RIIPGP201A	Conduct pump operations
RIIPGP204A	Carry out bore-field operations
RIIPHA201A	Operate raw material feed systems
RIIPRE201A	Conduct solvent extraction
RIIPRE202A	Prepare and carry out electrolytic cleaning process
RIIPRE203A	Prepare for sintering activities
RIIPRE204A	Sinter materials
RIIPRO202A	Conduct screening and conveying operations
RIIPRO204A	Bulk package and store product
RIIPRO205A	Conduct blending plant operations
RIIPSM201A	Tap furnaces
RIIPSM202A	Prepare for pelletising activities
RIIPSM203A	Produce pellets
RIISAM214A	Provide support to electrical tradesperson
RIISAM301A	Test operational functions of vehicles and equipment
RIISAM304A	Install, commission and maintain major conveyor equipment and systems
RIISAM305A	Repair and splice conveyor belting
RIISTD301A	Take environmental samples and measurements
RIIVEH201B	Operate light vehicle

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RIIVEH302A	Operate multi-combination vehicle
RIIWBP201A	Treat and dispose of rejects and tailings
RIIWBP202A	Distribute tailings
TLIA2009A	Complete and check import/export documentation

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RII30509 Certificate III in Mining Exploration

Modification History

Not applicable.

Description

This qualification reflects the role of exploration geological technicians or mining geological technicians who perform tasks involving a broad range of skilled applications applied in a wide variety of contexts, which may involve application of some discretion and judgement in selecting equipment, services or contingency measures.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of eighteen (18) units of competency made up of:

- seven (7) Core units, and
- eleven (11) elective units of which:
- at least six (6) must come from the Group A electives listed below
- up to five (5) from the Group B electives listed below
- up to one (1) unit may come from AQF level II, III or IV in this, or any other, Training Package or accredited course.

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIENV201A	Identify and assess environmental and heritage concerns
HLTFA301C	Apply First Aid
RIICOM201A	Communicate in the workplace
RIIOHS201A	Work safely and follow OHS policies and procedures
RIIQUA201A	Maintain and monitor site quality standards
RIIRIS201B	Conduct local risk control
RIISTD202A	Collect routine site samples
Group A electives	
Unit code	*Unit title*
CPPSIS3016A	Provide field support services
RIICAR301A	Rehabilitate exploration site
RIIEGS201A	Operate in isolated and remote situations

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RIIEGS301A	Operate and maintain instruments and field equipment
RIIEGS302A	Plan and undertake field trip
RIIEGS303A	Provide geological field assistance
RIIEGS304A	Mobilise equipment and materials
RIIEGS305B	Navigate in remote or trackless areas
RIIEGS306A	Prepare drill site
RIISTD302A	Process data and maintain accurate records
Group B electives	
Unit code	*Unit title*
HLTFA402C	Apply advanced first aid
BSBSUS301A	Implement and monitor environmentally sustainable work practices
RIISAM209A	Carry out operational maintenance
RIISTD301A	Take environmental samples and measurements
RIIVEH305A	Operate and maintain a four wheel drive vehicle

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RII30611 Certificate III in Small Mining Operations

Modification History

Not applicable.

Description

This qualification reflects the role of individuals working in an underground or open cut soft rock small mine, such as an opal mine. They perform tasks involving a broad range of skilled applications applied in a wide variety of contexts, which may involve application of some discretion and judgment in selecting equipment, services or contingency measures.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of fifteen (15) units of competency made up of:

- three (3) Core units, and
- twelve (12) elective units of which:
- at least five (5) must come from the Group A electives listed below
- up to seven (7) from the Group B electives listed below
- up to one (1) unit may come from AQF level II, III or IV level from this, or any other, Training Package.

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIICOM201A	Communicate in the workplace
RIIOHS201A	Work safely and follow OHS policies and procedues
RIIRIS201B	Conduct local risk control
Group A electives	
Unit code	*Unit title*
RIICAR302A	Rehabilitate small mine site
RIIMEX201A	Suppress dust in open-cut environment
RIIMEX203B	Break oversize rock
RIIMEX302B	Assess ground conditions
RIIMPO301C	Conduct hydraulic excavator operations
RIIMPO304B	Conduct wheel loader operations
RIIMPO311A	Conduct haul truck operations
RIIMPO314A	Operate small open cut mine equipment
RIIMSM301A	Establish a mining claim

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RIIMSM302A	Plan small mine operations
RIIMSM303A	Install underground shaft
RIIMSM304A	Inspect small mines operations
RIIMSM305A	Conduct materials extraction operations underground
RIIMSM306A	Design and maintain pillar system and ground control
RIIMSM307A	Install and maintain ventilation systems and equipment
RIISRM303B	Move and position materials to form stockpiles
RIISRM304B	Maintain stockpiles
RIIUMM201A	Install ground support
RIIUMM203A	Prepare and perform manual scaling operations
AHCNAR201A	Carry out natural area restoration works
AHCSAW201A	Conduct erosion and sediment control activities
AHCNAR303A	Implement revegetation works
AHCSAW301A	Construct conservation earthworks
Group B electives	
Unit code	*Unit title*
HLTFA301C	Apply first aid
RIIENV201A	Identify and assess environmental and heritage concerns
RIIERR302A	Respond to local emergencies and incidents
RIIHAN203A	Conduct lifting operations
RIIHAN208A	Perform dogging
RIIHAN209A	Perform basic rigging
RIIOHS204A	Work safely at heights
RIIPEO201B	Conduct conveyor operations
RIIRIS301B	Apply risk management processes

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RIISAM207A	Apply operational maintenance skills
RIISAM212A	Service mine plant and equipment
RIISAM213A	Position and set up mobile lighting
RIISAM310A	Install and commission small mine plant, machinery and services

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RII30709 Certificate III in Mine Emergency Response and Rescue

Modification History

Not applicable.

Description

This qualification reflects the role of response and rescue team members who work in a mine site or a construction site, who perform tasks involving a broad range of skilled applications applied in a wide variety of contexts, which may involve application of some discretion and judgement in selecting equipment, services or contingency measures.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of sixteen (16) units of competency made up of:

- five (5) Core units, and
- eleven (11) elective units of which:
- at least nine (9) must come from the Group A electives listed below
- up to two (2) units may come from AQF level II, III or IV in this, or any other, Training Package or accredited course.

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
HLTFA301C	Apply First Aid
RIICOM201A	Communicate in the workforce
RIIOHS201A	Work safely and follow OHS policies and procedures
RIIRIS201B	Conduct local risk control
	And either
RIIQUA201A	Maintain and monitor site quality standards
	OR

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RIIGOV201A	Comply with site work processes/procedures (Coal)
Group A electives	
Unit code	*Unit title*
HLTFA402C	Apply advanced first aid
PMAOHS211B	Prepare equipment for emergency response
PMAOMIR444B	Develop incident containment tactics
PUAAMS007B	Coordinate search and rescue operations
PUAFIR207B	Operate breathing apparatus open circuit
PUAFIR320	Render hazardous materials safe
PUAFIR316	Identify, detect and monitor hazardous materials at an incident
PUASAR024A	Undertake road crash rescue
PUASAR032A	Undertake vertical rescue
PUASAR025A	Undertake confined space rescue
PUASAR027A	Undertake land search rescue
RIIERR201A	Conduct fire team operations
RIIERR205A	Apply initial response First Aid
RIIERR301A	Respond to mine incident
RIIERR302A	Respond to local emergencies and incidents
RIIERR303A	Operate in self-contained regenerative oxygen breathing apparatus
RIIERR304A	Control emergencies and critical situations
RIIERR305A	Control underground fires
RIIERR306A	Conduct underground search
RIIERR307A	Extricate casualties from underground incident
RIIERR308A	Extricate and transport people involved in incidents

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RIIERR309A	Establish and operate from fresh air base
RIIERR310A	Provide support for rescue operations
RIIRIS301B	Apply risk management processes

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RII30809 Certificate III in Civil Construction Plant Operations

Modification History

CPCCCM2007A Use explosive power tools code change to CPCCCM2007B Use explosive power tools

Description

This qualification reflects the role of a skilled operator working with civil construction plant, who applies a broad range of skills in a varied work context, using some discretion and judgement and relevant theoretical knowledge. The individual may provide theoretical advice and support a team.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of nineteen (19) units of competency made up of:

- fourteen (14) Core units of competency, and
- five (5) units from the electives list below, including:
- one (1) unit from Group A electives listed below AND two (2) units from Group B electives listed below

OR

- two (2) units from Group A electives listed below
- additional units selected from Group A, B or C

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIBEF201B	Plan and organise work
RIICCM201A	Carry out measurements and calculations
RIICCM202A	Identify, locate and protect underground services
RIICCM203A	Read and interpret plans and specifications
RIICCM205A	Carry out manual excavation
RIICCM206A	Support plant operations
RIICCM207A	Spread and compact materials manually
RIICCM208A	Carry out basic levelling
RIICOM201A	Communicate in the workplace
RIIOHS201A	Work safely and follow OHS policies and procedures
RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
RIISAM203B	Use hand and power tools
RIISAM204B	Operate small plant and equipment

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RIIWMG203A	Drain and dewater civil construction site
Group A electives	
Unit code	*Unit title*
RIIMPO318B	Conduct civil construction skid steer loader operations
RIIMPO319A	Conduct backhoe/loader operations
RIIMPO320B	Conduct civil construction excavator operations
RIIMPO321B	Conduct civil construction wheeled front end loader operations
RIIMPO322A	Conduct civil construction tracked front end loader operations
RIIMPO323A	Conduct civil construction dozer operations
RIIMPO324A	Conduct civil construction grader operations
RIIMPO325A	Conduct civil construction scraper operations
RIIMPO327A	Conduct pipe layer operations
Group B electives	
Unit code	*Unit title*
RIICRC308A	Conduct paver operations
RIICRC309A	Conduct stabiliser operations
RIIHAN309A	Conduct telescopic materials handler operations
RIIHAN311A	Conduct operations with integrated tool carrier
RIIMPO311A	Conduct haul truck operations
RIIMPO315A	Conduct tractor operations
RIIMPO316A	Conduct self propelled compactor operations
RIIMPO317A	Conduct roller operations
RIIMPO326A	Conduct civil construction water cart operations
RIIMPO328A	Conduct continuous bucket trencher operations

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RIIVEH304B	Conduct tip truck operations
Group C Electives	
Unit code	*Unit title*
CPCCCM2007B	Use explosive power tools
HLTFA301C	Apply first aid
RIICCM204A	Place and fix reinforcement materials
RIICCM209A	Carry out concrete work
RIICCM210A	Install trench support
RIICCM211A	Erect and dismantle temporary fencing and gates
RIICRC201A	Repair potholes
RIICRC208A	Lay pipes
RIIHAN208A	Perform dogging
RIIHAN211A	Conduct basic scaffolding operations
RIIHAN301B	Operate elevating work platform
RIIHAN308A	Load and unload plant
RIIOHS202A	Enter and work in confined spaces
RIIOHS204A	Work safely at heights
RIIOHS205A	Control traffic with stop-slow bat
RIIQUA201A	Maintain and monitor site quality standards
RIIRIS201B	Conduct local risk control
RIISAM205A	Cut, weld and bend materials
RIISAM213A	Position and set up mobile lighting
AHCSAW201A	Conduct erosion and sediment control activities
AHCSAW301A	Construct conservation earthworks

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RII30912 Certificate III in Civil Construction

Modification History

CPCCCM2007A Use explosive power tools code change to CPCCCM2007B Use explosive power tools

Description

This qualification reflects the role of a skilled operator working in civil construction, who applies a broad range of skills in a varied work context, using some discretion and judgement and relevant theoretical knowledge.
The qualification applies to specialist occupations in Bituminous Surfacing Bridge Construction and Maintenance, Pipe Laying, Road Construction and Maintenance, Road Marking, Tunnel Construction, Timber Bridge Construction and Maintenance and Civil Construction general occupations. The individual may provide theoretical advice and support a team.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc)

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

The qualification has core and elective units of competency requirements that cover the general and specialist skills for seven (7) specialist and one (1) general civil construction stream.

Stream 1 – Bituminous Surfacing
Stream 2 – Bridge Construction and Maintenance
Stream 3 – Pipe Laying
Stream 4 – Road Construction and Maintenance
Stream 5 – Road Marking
Stream 6 – Tunnel Construction
Stream 7 – Timber Bridge Construction and Maintenance
Stream 8 – Civil Construction General

The core units and requirements of one (1) stream must be met for award of this qualification.

The following units of competency are required:

Stream 1 – Bituminous Surfacing

Successful completion of twenty five (25) units of competency made up of:
seven (7) core units, plus seven (7) Group A units plus
eleven (11) elective units of which:
- at least six (6) must come from the Group B electives listed below including at least three (3) bituminous surfacing units at AQF 3 level (CBS3) OR at least two (2) bituminous surfacing units at AQF 3 level (CBS3) and one (1) at AQF 4 level (CBS4)
- up to five (5) units may come from AQF 2, 3 or 4 level from this, or any other Training Package
- up to three (3) units of competency may come from an AQF 2, 3 or 4 level accredited course

Stream 2 – Bridge Construction and Maintenance

Successful completion of twenty five (25) units of competency made up of:
seven (7) core units, plus eight (8) Group C units plus
ten (10) elective units of which:
- at least five (5) must come from the Group D electives listed below including at least two (2) bridge maintenance units at AQF 3 level (CBM3)
- up to five (5) units may come from AQF 2, 3 or 4 level from this, or any other Training Package
- up to three (3) units of competency may come from an AQF 2, 3 or 4 level accredited course

Stream 3 – Pipe Laying

Successful completion of twenty five (25) units of competency made up of:
seven (7) core units, plus ten (10) Group E units plus
eight (8) elective units of which:
- at least three (3) must come from the Group F electives listed below of which at least one (1) marked *
- at least four (4) of the units must be at AQF 3 level
- up to five (5) units may come from AQF 2, 3 or 4 level from this, or any other Training Package

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- up to three (3) units of competency may come from an AQF 2, 3 or 4 level accredited course

Stream 4 – Road Construction and Maintenance
Successful completion of twenty five (25) units of competency made up of:
seven (7) core units, plus nine (9) Group G units plus
nine (9) elective units of which:
- at least four (4) must be road construction (CRC) units from the Group H electives listed below including at least two (2) at AQF 3 level - at least four (4) of the total elective units must be at AQF 3 level
- up to five (5) unit may come from AQF 2, 3 or 4 level from this, or any other Training Package
- up to three (3) units of competency may come from an AQF 2, 3 or 4 level accredited course

Stream 5 – Road Marking
Successful completion of twenty two (22) units of competency made up of:
seven (7) core units, plus four (4) Group I units plus
eleven (11) elective units of which:
- at least seven (7) must come from the Group J electives listed below including a minimum of five (5) road marking (CRM) units of which one (1) must be at AQF 3 level
- up to four (4) units may come from AQF 2, 3 or 4 level from this, or any other Training Package
- up to two (2) units of competency may come from an AQF 2, 3 or 4 level accredited course

Stream 6 – Tunnel Construction
Successful completion of twenty five (25) units of competency made up of:
seven (7) core units, plus eight (8) Group K units plus
ten (10) elective units of which:
- at least five (5) must come from the Group L electives listed below including a minimum of three (3) units at AQF 3 level, of which at least two (2) must be tunnel construction (CTC) units
- up to five (5) units may come from AQF 2, 3 or 4 level from this, or any other Training Package - up to three (3) units of competency may come from an AQF 2, 3 or 4 level accredited course

Stream 7 – Timber Bridge Construction and Maintenance
Successful completion of twenty eight (28) units of competency made up of:
seven (7) core units, plus twelve (12) Group M units plus nine (9) elective units of which:
- at least five (5) must come from the Group N electives listed below including a minimum of two (2) units at AQF 3 level
- up to four (4) units may come from AQF 2, 3 or 4 level from this, or any other Training Package
- up to three (3) units of competency may come from an AQF 2, 3 or 4 level accredited course

Stream 8 – Civil Construction General
Successful completion of twenty five (25) units of competency made up of:
seven (7) core units, plus eighteen (18) elective units of which:
- at least thirteen (13) must come from the Group O electives or the Group P high risk work electives list below including at least ten (10) at AQF 3 level

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- up to five (5) units may come from AQF 2, 3 or 4 level from this, or any other Training Package
- up to three (3) units of competency may come from an AQF 2, 3 or 4 level accredited course

Units of competency chosen must
- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.

There are both licenced and non-licenced units of competency relating to high risk work in the RII09 Resources and Infrastructure Industry Training Package. To be appointed under any statutory requirements in related roles, units of competency should be demonstrated to meet the state/territory licensing requirements. State/territory licensing requirements need to be confirmed by the Registered Training Organisation delivering and/or assessing the competency.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIBEF201A	Plan and organise work
RIICCM201A	Carry out measurements and calculations
RIICCM203A	Read and interpret plans and specifications
RIICOM201A	Communicate in the workplace
RIIOHS201A	Work safely and follow OHS policies and procedures
RIISAM203B	Use hand and power tools
RIISAM204B	Operate small plant and equipment
Group A Specialist Group - Bituminous Surfacing	
Unit code	*Unit title*
RIICBS202A	Hand spread asphalt
RIICBS203A	Safely handle bituminous materials
RIICBS207A	Take samples of materials used in road surfacing
RIICCM207A	Spread and compact materials manually

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RIIOHS302A	Implement traffic management plan
RIIIMG301A	Maintain site records
RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
Group B Specialist Group - Bituminous Surfacing Electives	
Unit code	*Unit title*
BSBCUS301B	Deliver and monitor a service to customers
BSBFLM305C	Support operational plan
BSBFLM312B	Contribute to team effectiveness
RIICBS201A	Conduct tack coat spraying operations
RIICBS204A	Conduct aggregate spreader box operations
RIICBS205A	Roll aggregate in sprayed sealing operations
RIICBS206A	Conduct pavement sweeping operations
RIICBS208A	Conduct road maintenance operations
RIICBS301A	Conduct profile planer operations
RIICBS302A	Conduct paver screeding operations
RIICBS303A	Conduct materials transfer vehicle operations
RIICBS304A	Compact asphalt with rollers
RIICBS305A	Conduct asphalt paver operations
RIICBS306A	Conduct slurry sealing operations
RIICBS307A	Conduct bitumen sprayer operations
RIICBS308A	Load aggregate using a purpose built loader
RIICBS309A	Conduct self-propelled aggregate spreader operations
RIICBS310A	Conduct patching operations
RIICBS311A	Produce asphalt products

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RIICBS312A	Conduct bitumen tanker operations
RIICBS402B	Apply the principles for the application of bituminous sprayed treatment
RIICCM205A	Carry out manual excavation
RIICBS303A	Conduct materials transfer vehicle operations
RIICBS304A	Compact asphalt with rollers
RIICBS305A	Conduct asphalt paver operations
RIICBS306A	Conduct slurry sealing operations
RIICBS307A	Conduct bitumen sprayer operations
RIICBS308A	Load aggregate using a purpose built loader
RIICBS309A	Conduct self-propelled aggregate spreader operations
RIICBS310A	Conduct patching operations
RIICBS311A	Produce asphalt products
RIIVEH304B	Conduct tip truck operations
Group C Specialist Group –Bridge Construction and Maintenance	
Unit code	*Unit title*
RIICCM202A	Identify, locate and protect underground services
RIICCM205A	Carry out manual excavation
RIICCM206A	Support plant operations
RIICCM207A	Spread and compact materials manually
RIICCM208A	Carry out basic levelling
RIIOHS302A	Implement traffic management plan
RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
RIIWMG203A	Drain and dewater civil construction site
Group D Specialist Group – Bridge Construction and Maintenance Electives	

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Unit code	*Unit title*
PCCCM2007A	Use explosive power tools
CPCCSF2004A	Place and fix reinforcement materials
RIICBM201A	Strip pile heads
RIICBM301A	Maintain concrete bridges
RIICBM302A	Install pre-cast girders
RIICBM303A	Install pre-cast parapets
RIICBM304A	Operate a bridge inspection unit
RIICBM305A	Install pre-cast concrete bridge decks
RIICBM306A	Undertake concreting work on concrete bridges
RIICBM307A	Construct formwork and false work on concrete bridges
RIICCM209A	Carry out concrete work
RIICCM210A	Install trench support
RIICCM211A	Erect and dismantle temporary fencing and gates
RIICCM301A	Construct and dismantle fences and gates
RIICRC201A	Repair potholes
RIICRC208A	Lay pipes
RIIHAN208A	Perform dogging
RIIHAN211A	Conduct basic scaffolding operations
RIIHAN301A	Operate elevating work platform
RIIHAN302A	Conduct intermediate scaffolding operations
RIIIMG301A	Maintain site records
RIIOHS202A	Enter and work in confined spaces
RIIOHS205A	Control traffic with stop-slow bat
RIIRIS201B	Conduct local risk control

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RIISAM205A	Cut, weld and bend materials
RIIWMG301A	Control construction site water table
Group E Specialist Group – Pipe Laying	
Unit code	*Unit title*
RIICCM202A	Identify, locate and protect underground services
RIICCM205A	Carry out manual excavation
RIICCM206A	Support plant operations
RIICCM207A	Spread and compact materials manually
RIICCM208A	Carry out basic levelling
RIIOHS302A	Implement traffic management plan
RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
RIIWMG203A	Drain and dewater civil construction site
RIICCM210A	Install trench support
RIICRC208A	Lay pipes
Group F Specialist Group – Pipe Laying Electives	
Unit code	*Unit title*
CPCCM2007A	Use explosive power tools
RIICCM209A	Carry out concrete work
RIICCM211A	Erect and dismantle temporary fencing and gates
RIICCM301A	Construct and dismantle fences and gates
RIICPL301A*	Install water mains pipelines
RIICPL302A*	Install storm water systems
RIICPL303A*	Install sewer pipelines
RIICPL304A	Install pre-cast gully pits

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RIICPL305A	Install pre-case access chambers
RIICRC201A	Repair potholes
RIICRC203A	Install sub-soil drainage
RIICRC209A	Lay reinforced concrete box culverts
RIICRC301A	Maintain drainage systems
RIIHAN208A	Perform dogging
RIIHAN211A	Conduct basic scaffolding operations
RIIHAN301A	Operate elevating work platform
RIIIMG301A	Maintain site records
RIIMPO327A	Conduct pipe layer operations
RIIOHS202A	Enter and work in confined spaces
RIIOHS205A	Control traffic with stop-slow bat
RIIRIS201A	Conduct local risk control
RIISAM205A	Cut, weld and bend materials
RIIWMG301A	Control construction site water table
UEGNSG202A	Construct and lay distribution pipelines
Group G Specialist Group – Road Construction and Maintenance	
Unit code	*Unit title*
RIICCM202A	Identify, locate and protect underground services
RIICCM205A	Carry out manual excavation
RIICCM206A	Support plant operations
RIICCM207A	Spread and compact materials manually
RIICCM208A	Carry out basic levelling
RIICRC201A	Repair potholes
RIIOHS302A	Implement traffic management plan

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RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
RIIWMG203A	Drain and dewater civil construction site
Group H Specialist Group – Road Construction and Maintenance Electives	
Unit code	*Unit title*
CPCCCM2007A	Use explosive power tools
CPCCSF2004A	Place and fix reinforcement materials
FPICOT2221B	Trim and cross cut felled trees
FPIFGM3212	Fall trees manually (intermediate)
RIICBS202A	Hand spread asphalt
RIICBS203A	Safely handle bituminous materials
RIICBS301A	Conduct profile planer operations
RIICCM209A	Carry out concrete work
RIICCM210A	Install trench support
RIICCM211A	Erect and dismantle temporary fencing and gates
RIICCM301A	Construct and dismantle fences and gates
RIICPL302A	Install storm water systems
RIICPL304A	Install pre-cast gully pits
RIICPL305A	Install pre-cast access chambers
RIICRC202A	Install signs
RIICRC203A	Install sub-soil drainage
RIICRC204A	Install and maintain roadside fixtures
RIICRC205A	Install utility poles
RIICRC206A	Install pre-cast concrete crash barriers
RIICRC207A	Install noise barriers

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RIICRC208A	Lay pipes
RIICRC209A	Lay reinforced concrete box culverts
RIICRC301A	Maintain drainage systems
RIICRC302A	Place and form concrete kerb, channel and fixtures
RIICRC303A	Lay pavers
RIICRC304A	Maintain sealed roads
RIICRC305A	Conduct road construction paver screeding operations
RIICRC306A	Conduct earthworks
RIICRC307A	Conduct road pavement construction
RIICRC309A	Conduct stabiliser operations
RIICRC311	Conduct concrete road paver operations
RIICRC312	Setup and maintain concrete paver stringlines
RIICRC313	Conduct concrete road curing and texturing operations
RIICRC314	Handle concrete materials
RIICRC315	Use concreting materials and equipment
RIICRC316	Place and compact concrete
RIICRC317	Finish concrete pavements
RIICRC318	Cure concrete
RIICRC319	Saw and cut concrete pavements to initiate planned cracks
RIICRC320	Seal concrete pavements
RIICRC321	Use automated paving guidance systems
RIICRC322	Receive, check and record concrete deliveries
RIICRC323	Insert tie bars in fresh concrete
RIIHAN201A	Operate a forklift
RIIHAN208A	Perform dogging

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RIIHAN211A	Conduct basic scaffolding operations
RIIHAN301A	Operate elevating work platform
RIIHAN307A	Operate a vehicle loading crane
RIIIMG301A	Maintain site records
RIIOHS202A	Enter and work in confined spaces
RIIOHS205A	Control traffic with stop-slow bat
RIIRIS201B	Conduct local risk control
RIISAM205A	Cut, weld and bend materials
RIIWMG301A	Control construction site water table
TLID3011A	Conduct specialised forklift operations
Group I Specialist Group – Road Marking	
Unit code	*Unit title*
RIICRM202A	Handle and store road marking materials
RIICRM204A	Prepare surface for road marking
RIIOHS302A	Implement traffic management plan
RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
Group J Specialist Group – Road Marking Electives	
Unit code	*Unit title*
RIICCM205A	Carry out manual excavation
RIICCM206A	Support plant operations
RIICCM208A	Carry out basic levelling
RIICCM209A	Carry out concrete work
RIICRC202A	Install signs
RIICRM201A	Escort mobile road marking operations

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RIICRM203A	Conduct pedestrian road marking operations
RIICRM205A	Conduct road marking measuring operations
RIICRM206A	Conduct airless and atomised spraying operations
RIICRM207A	Install raised pavement markers
RIICRM301A	Conduct ride on road marking operations
RIICRM302A	Conduct long line road marking operations
RIICRM303A	Conduct thermo plastic road marking operations
RIIHAN201A	Operate a forklift
RIIHAN208A	Perform dogging
RIIHAN301A	Operate elevating work platform
RIIHAN307A	Operate a vehicle loading crane
RIIIMG301A	Maintain site records
RIIOHS205A	Control traffic with stop-slow bat
RIIRIS201B	Conduct local risk control
RIISAM205A	Cut, weld and bend materials
Group K Specialist Group –Tunnel Construction	
Unit code	*Unit title*
RIICCM202A	Identify, locate and protect underground services
RIICCM205A	Carry out manual excavation
RIICCM206A	Support plant operations
RIICCM207A	Spread and compact materials manually
RIICCM208A	Carry out basic levelling
RIICRC203A	Install sub-soil drainage
RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials

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RIIWMG203A	Drain and dewater civil construction site
Group L Specialist Group – Tunnel Construction Electives	
Unit code	*Unit title*
CPCCCM2007A	Use explosive power tools
RIIBLA202A	Support underground shotfiring operations
RIIBLA205A	Store, handle and transport explosives
RIIBLA303A	Conduct underground development shotfiring
RIICCM209A	Carry out concrete work
RIICCM210A	Install trench support
RIICCM211A	Erect and dismantle temporary fencing and gates
RIICCM301A	Construct and dismantle fences and gates
RIICFW302A	Install temporary and permanent rock anchors
RIICFW303A	Install primary ground support
RIICRC201A	Repair potholes
RIICRC208A	Lay pipes
RIICRC301A	Maintain drainage systems
RIICTC301A	Install tunnelling constructions services
RIICTC302A	Line tunnel
RIICTC303A	Excavate tunnel by machine
RIICTC304A	Muck out tunnel earthworks
RIICTC305A	Construct portals
RIIHAN208A	Perform dogging
RIIHAN211A	Conduct basic scaffolding operations
RIIHAN301A	Operate elevating work platform
RIIOHS202A	Enter and work in confined spaces

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RIIOHS205A	Control traffic with stop-slow bat
RIIOHS302A	Implement traffic management plan
RIIRIS201A	Conduct local risk control
RIISAM205A	Cut, weld and bend materials
RIIUND310	Apply shot-crete
Group M Specialist Group – Timber Bridge Construction and Maintenance	
Unit code	*Unit title*
RIICCM202A	Identify, locate and protect underground services
RIICCM205A	Carry out manual excavation
RIICCM206A	Support plant operations
RIICCM210A	Install trench support
RIICTB201A	Maintain timber bridges
RIICTB301A	Undertake visual inspection
RIICTB302A	Install temporary support members
RIICTB304A	Install or replace sub-structure members
RIICTB305A	Install or replace super-structure members
RIICTB306A	Splice and connect timber members
RIIOHS202A	Enter and work in confined spaces
RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
Group N Specialist Group – Timber Bridge Construction and Maintenance Electives	
Unit code	*Unit title*
FPICOT2239A	Trim and cut felled trees
RIICBM304A	Operate a bridge inspection unit
RIICBM307A	Construct formwork and false work on concrete bridges

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RIICCM207A	Spread and compact materials manually
RIICCM208A	Carry out basic levelling
RIICCM209A	Carry out concrete work
RIICCM301A	Construct and dismantle fences and gates
RIICFW304A	Conduct pile driving operations
RIICFW306A	Direct pile driving operations
RIICTB202A	Apply bridge durability treatment
RIICTB203A	Produce drawings and sketches
RIICTB303A	Erect a temporary modular support system (bailey) on an existing bridge
RIICTB307A	Assemble a temporary modular bridge
RIICTB308A	Install or replace truss members
RIICTB309A	Construct, maintain and remove coffer dams
RIICTB310A	Construct specialised timber deck systems
RIIHAN208A	Perform dogging
RIIHAN211A	Conduct basic scaffolding operations
RIIHAN302A	Conduct intermediate scaffolding operations
RIIOHS205A	Control traffic with stop-slow bat
RIIOHS302A	Implement traffic management plan
RIIRIS201B	Conduct local risk control
RIISAM205A	Cut, weld and bend materials
RIIWMG203A	Drain and dewater civil construction site
Group O Specialist Group – Civil Construction General Electives	
Unit code	*Unit title*
CPCCCM2007A	Use explosive power tools

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CPCCSF2004A	Place and fix reinforcement materials
BSBCUS301A	Deliver and monitor a service to customers
BSBFLM312B	Contribute to team effectiveness
BSBFLM305C	Support operational plan
FPICOT2221B	Trim and cross cut felled trees
FPIFGM3204A	Fall trees manually (intermediate)
RIIBLA201A	Support shotfiring operations
RIIBLA202A	Support underground shotfiring operations
RIIBLA205A	Store, handle and transport explosives
RIIBLA301A	Conduct surface shotfiring operations
RIIBLA303A	Conduct underground development shotfiring
RIICBM201A	Strip pile heads
RIICBM301A	Maintain concrete bridges
RIICBM302A	Install pre-cast girders
RIICBM303A	Install pre-cast parapets
RIICBM304A	Operate a bridge inspection unit
RIICBM305A	Install pre-cast concrete bridge decks
RIICBM306A	Undertake concreting work on concrete bridges
RIICBM307A	Construct formwork and false work on concrete bridges
RIICBS201A	Conduct tack coat spraying operations
RIICBS202A	Hand spread asphalt
RIICBS203A	Safely handle bituminous materials
RIICBS204A	Conduct aggregate spreader box operations
RIICBS205A	Roll aggregate in sprayed sealing operations
RIICBS206A	Conduct pavement sweeping operations

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RIICBS207A	Take samples of materials used in road surfacing
RIICBS208A	Conduct road maintenance operations
RIICBS301A	Conduct profile planer operations
RIICBS302A	Conduct paver screeding operations
RIICBS303A	Conduct materials transfer vehicle operations
RIICBS304A	Compact asphalt with rollers
RIICBS305A	Conduct asphalt paver operations
RIICBS306A	Conduct slurry sealing operations
RIICBS307A	Conduct bitumen sprayer operations
RIICBS308A	Load aggregate using a purpose built loader
RIICBS309A	Conduct self-propelled aggregate spreader operations
RIICBS310A	Conduct patching operations
RIICBS311A	Produce asphalt products
RIICBS312A	Conduct bitumen tanker operations
RIICCM202A	Identify, locate and protect underground services
RIICCM205A	Carry out manual excavation
RIICCM206A	Support plant operations
RIICCM207A	Spread and compact materials manually
RIICCM208A	Carry out basic levelling
RIICCM209A	Carry out concrete work
RIICCM210A	Install trench support
RIICCM211A	Erect and dismantle temporary fencing and gates
RIICCM301A	Construct and dismantle fences and gates
RIICFW301A	Construct underpinning
RIICBS303A	Conduct materials transfer vehicle operations

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RIICBS304A	Compact asphalt with rollers
RIICBS305A	Conduct asphalt paver operations
RIICBS306A	Conduct slurry sealing operations
RIICFW302A	Install temporary and permanent rock anchors
RIICFW303A	Install primary ground support
RIICFW304A	Conduct pile driving operations
RIICFW305A	Conduct cast in-situ pilings operations
RIICFW306A	Direct pile driving operations
RIICFW307A	Direct cast in-situ piling operations
RIICPL301A	Install water mains pipelines
RIICPL302A	Install storm water systems
RIICPL303A	Install sewer pipelines
RIICPL304A	Install pre-cast gully pits
RIICPL305A	Install pre-cast access chambers
RIICRC201A	Repair potholes
RIICRC202A	Install signs
RIICRC203A	Install sub-soil drainage
RIICRC204A	Install and maintain roadside fixtures
RIICRC205A	Install utility poles
RIICRC206A	Install pre-cast concrete crash barriers
RIICRC207A	Install noise barriers
RIICRC208A	Lay pipes
RIICRC209A	Lay reinforced concrete box culverts
RIICRC301A	Maintain drainage systems
RIICRC302A	Place and form concrete kerb, channel and fixtures

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RIICRC303A	Lay pavers
RIICRC304A	Maintain sealed roads
RIICRC305A	Conduct road construction paver screeding operations
RIICRC306A	Conduct earthworks
RIICRC307A	Conduct road pavement construction
RIICRM201A	Escort mobile road marking operations
RIICRM202A	Handle and store road marking materials
RIICRM203A	Conduct pedestrian road marking operations
RIICRM204A	Prepare surface for road marking
RIICRM205A	Conduct road marking measuring operations
RIICRM206A	Conduct airless and atomised spraying operations
RIICRM207A	Install raised pavement markers
RIICRM301A	Conduct ride on road marking operations
RIICRM302A	Conduct long line road marking operations
RIICRM303A	Conduct thermo plastic road marking operations
RIICTC301A	Install tunnelling constructions services
RIICTC302A	Line tunnel
RIICTC303A	Excavate tunnel by machine
RIICTC304A	Muck out tunnel earthworks
RIICTC305A	Construct portals
RIICTT301A	Conduct fluid assisted directional boring
RIICTT302A	Conduct impact moling, ramming and augering
RIICTT303A	Control micro tunnelling and pipe jacking
RIICTT304A	Undertake on-line replacement for existing pipeline systems
RIICTT305A	Undertake localised repair and sealing of existing pipeline

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	systems
RIICTT306A	Install cure in-place linings for existing pipeline systems
RIICTT307A	Spray linings for existing pipeline systems
RIICTT308A	Install close-fit linings for existing pipeline systems
RIICTT309A	Install slip lining in existing pipeline systems
RIICTT310A	Renovate large diameter pipes and chambers
RIIHAN201A	Operate a forklift
RIIHAN208A	Perform dogging
RIIHAN211A	Conduct basic scaffolding operations
RIIHAN301A	Operate elevating work platform
RIIHAN307A	Operate a vehicle loading crane
RIIHAN308A	Load and unload plant
RIIHAN309A	Conduct telescopic materials handler operations
RIIMPO318B	Conduct civil construction skid steer loader operations
RIIIMG301A	Maintain site records
RIIOGF302A	Operate drilling fluids and mud pits
RIIOGN303A	Operate mud systems
RIIOHS202A	Enter and work in confined spaces
RIIOHS205A	Control traffic with stop-slow bat
RIIOHS302A	Implement traffic management plan
RIIRIS201B	Conduct local risk control
RIISAM205A	Cut, weld and bend materials
RIIWMG203A	Drain and dewater civil construction site
RIIWMG301A	Control construction site water table
TLID1107C	Conduct specialised forklift operations

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UEGNSG202B	Construct and lay distribution pipelines
Group P – High risk work electives	
Unit code	*Unit title*
CPCCLDG3001A	Licence to perform dogging
CPCCLRG3001A	Licence to perform rigging – basic level
CPCCLSF2001A	Licence to erect, alter and dismantle scaffolding – basic level

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RII31609 Certificate III in Trenchless Technology

Modification History

Not applicable.

Description

This qualification reflects the role of a skilled operator working in trenchless technology in the civil construction industry, who applies a broad range of skills in a varied work context, using some discretion and judgement and relevant theoretical knowledge. The individual may provide theoretical advice and support a team.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency
Successful completion of twenty six (26) units of competency made up of:

- eighteen (18) Core units, and
- eight (8) elective units of which:
- at least five (5) must come from the Group A electives listed below including at least four (4) at Certificate III level, of which at least one (1) must be a trenchless technology (CTT) unit
- up to three (3) units may come from AQF level III from this, or any other, Training Package or accredited course.

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIBEF201B	Plan and organise work
RIICCM201A	Carry out measurements and calculations
RIICCM202A	Identify, locate and protect underground services
RIICCM203A	Read and interpret plans and specifications
RIICCM205A	Carry out manual excavation
RIICCM206A	Support plant operations
RIICCM207A	Spread and compact materials manually
RIICCM208A	Carry out basic levelling
RIICCM210A	Install trench support
RIICOM201A	Communicate in the workplace
RIICRC203A	Install sub-soil drainage

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RIIOHS201A	Work safely and follow OHS policies and procedures
RIIRIS201B	Conduct local risk control
RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
RIISAM203B	Use hand and power tools
RIISAM204B	Operate small plant and equipment
RIIWMG203A	Drain and dewater civil construction site
RIIWMG301A	Control construction site water table
Group A Electives	
Unit code	*Unit title*
NWP331B	Inspect conduit and report on condition and features
NWP440A	Supervise conduit inspection and reporting
RIICCM209A	Carry out concrete work
RIICCM301A	Construct and dismantle fences and gates
RIICPL301A	Install water mains pipelines
RIICPL302A	Install storm water systems
RIICPL303A	Install sewer pipelines
RIICPL304A	Intall pre-cast access chambers
RIICRC208A	Lay pipes
RIICTC301A	Install tunnelling constructions services
RIICTC302A	Line tunnel
RIICTC303A	Excavate tunnel by machine
RIICTC304A	Muck out tunnel earthworks
RIICTC305A	Construct portals
RIICTT301A	Conduct fluid assisted directional boring

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RIICTT302A	Conduct impact moling, ramming and augering
RIICTT303A	Control micro tunnelling and pipe-jacking
RIICTT304A	Undertake on-line replacement for existing pipeline systems
RIICTT305A	Undertake localised repair and sealing of existing pipeline systems
RIICTT306A	Install cure in-place linings for existing pipeline systems
RIICTT307A	Spray linings for existing pipeline systems
RIICTT308A	Install close-fit linings for existing pipeline systems
RIICTT309A	Install slip lining in existing pipeline systems
RIICTT310A	Renovate large diameter pipes and chambers
RIIHAN208A	Perform dogging
RIIHAN211A	Conduct basic scaffolding operations
RIIHAN301B	Operate elevating work platform
RIIHAN307A	Operate a vehicle loading crane
RIIIMG301A	Maintain site records
RIIMPO319A	Conduct backhoe/loader operations
RIIMPO320B	Conduct civil construction excavator operations
RIIOGF302A	Operate drilling fluids and mud pits
RIIOGN303A	Operate mud systems
RIIOHS202A	Enter and work in confined spaces
RIIOHS205A	Control traffic with stop-slow bat
RIISAM205A	Cut, weld and bend materials

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RII31209 Certificate III in Civil Foundations

Modification History

Not applicable.

Description

This qualification reflects the role of a skilled operator working in foundation work in the civil construction industry, who applies a broad range of skills in a varied work context, using some discretion and judgement and relevant theoretical knowledge. The individual may provide theoretical advice and support a team.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of twenty five (25) units of competency made up of:

- fourteen (14) Core units, and
- eleven (11) elective units of which:
- at least ten (10) must come from the Group A electives listed below including at least five (5) units at Certificate III level, two (2) of which must be foundation work (CFW) units
- up to one (1) unit may come from AQF level II, III or IV in this, or any other Training Package.

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIBEF201B	Plan and organise work
RIICCM201A	Carry out measurements and calculations
RIICCM202A	Identify, locate and protect underground services
RIICCM203A	Read and interpret plans and specifications
RIICCM205A	Carry out manual excavation
RIICCM207A	Spread and compact materials manually
RIICCM208A	Carry out basic levelling
RIICOM201A	Communicate in the workplace
RIIOHS201A	Work safely and follow OHS policies and procedures
RIISAM201A	Handle resources and infrastructure materials and safely dispose of non toxic materials
RIISAM203B	Use hand and power tools
RIISAM204B	Operate small plant and equipment
RIIWMG203A	Drain and dewater civil construction site
RIIWMG301A	Control construction site water table

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Group A	
Unit code	*Unit title*
RIICCM209A	Carry out concrete work
RIICCM210A	Install trench support
RIICCM211A	Erect and dismantle temporary fencing and gates
RIICCM301A	Construct and dismantle fences and gates
RIICFW301A	Construct underpinning
RIICFW302A	Install temporary and permanent rock anchors
RIICFW303A	Install primary ground support
RIICFW304A	Conduct pile driving operations
RIICFW305A	Conduct cast in-situ piling operations
RIICFW306A	Direct pile driving operations
RIICFW307A	Direct cast in-situ piling operations
RIICRC306A	Conduct earthworks
RIIHAN208A	Perform dogging
RIIHAN211A	Conduct basic scaffolding operations
RIIHAN301B	Operate elevating work platform
RIIIMG301A	Maintain site records
RIINHB202A	Set up/pack up drill site
RIIOHS202A	Enter and work in confined spaces
RIIOHS205A	Control traffic with stop-slow bat
RIIOHS302A	Implement traffic management plan
RIIQUA201A	Maintain and monitor site quality standards
RIIRIS201B	Conduct local risk control
RIISAM205A	Cut, weld and bend materials

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RIISAM213A	Position and set up mobile lighting
AHCSAW201A	Conduct erosion and sediment control activities
AHCSAW301A	Construct conservation earthworks

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RII31809 Certificate III in Drilling Operations

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as drillers who perform tasks involving a broad range of skilled applications applied in a wide variety of contexts, which may involve application of some discretion and judgement in selecting equipment, services or contingency measures.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of thirteen (13) units of competency made up of:

- eight (8) Core units, and
- five (5) elective units of which:
- up to two (2) must come from the Group A electives listed below, including at least one (1) 'Conduct' unit
- at least two (2) from the Group B electives listed below
- up to one (1) unit may come from AQF level II, III or IV level from this, or any other, Training Package

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBCMN311B	Maintain workplace safety
RIIBEF301A	Run on-site operations
RIICOM201A	Communicate in the workplace
RIINHB301A	Set up and prepare for drilling operations
RIIRIS301B	Apply risk management processes
RIISAM209A	Carry out operational maintenance
MSAPMSUP172A	Identify and minimise environmental hazards
TAEDEL301A	Provide work skill instruction
Group A electives	
Unit code	*Unit title*
RIIBHD305	Conduct down-hole hammer drilling
RIINHB302A	Conduct reaming
RIINHB303A	Install product pipe

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RIINHB304B	Conduct air drilling
RIINHB305A	Conduct continuous flight auger drilling
RIINHB306A	Conduct large diameter auger drilling
RIINHB307B	Conduct conventional core drilling
RIINHB308A	Conduct wireline core drilling
RIINHB309A	Conduct guided boring
RIINHB310A	Conduct surface directional drilling
RIINHB311A	Conduct mud rotary drilling
RIINHB312A	Conduct raise boring
RIINHB313A	Conduct cable tool drilling
RIINHB315A	Conduct top-hole hammer drilling
RIINHB316A	Conduct underground in-seam directional drilling
RIINHB317A	Install underground in-seam directional drilling standpipes
RIINHB318A	Install and operate water and gas control equipment
RIINHB319A	Install de-watering conduit and gas drainage equipment
RIINHB320A	Construct monitoring bores
RIINHB322A	Construct multiple aquifer production bores
RIINHB323A	Conduct horizontal directional drilling
RIINHB324B	Carry out grouting or cementing operations
RIINHB325A	Construct and complete single aquifer production bores
Group B electives	
Unit code	*Unit title*
HLTFA301C	Apply first aid
HLTFA402C	Apply advanced first aid
PMASUP236B	Operate vehicles in the field

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RIIBHD301A	Conduct surface blast hole drilling operations
RIIBHD304B	Set-up and prepare for open cut drilling operations
RIIBLA201A	Support shotfiring operations
RIIBLA202B	Support underground shotfiring operations
RIIBLA205A	Store, handle and transport explosives
RIIBLA301A	Conduct surface shotfiring operations
RIIBLA303A	Conduct underground development shotfiring
RIIBLA304A	Conduct underground production shotfiring
RIIERR301A	Respond to mine incident
RIIERR302A	Respond to local emergencies and incidents
RIINHB205A	Assist continuous flight auger drilling
RIINHB206A	Assist large diameter auger drilling
RIINHB208B	Assist diamond core drilling
RIINHB209A	Assist guided boring
RIINHB210B	Assist surface directional drilling
RIINHB211A	Assist mud rotary drilling
RIINHB213A	Assist cable tool drilling
RIINHB219A	Assist with air drilling
RIIOGD304A	Apply effective coal seam gas control practices
RIIOGD305A	Apply blow out prevention operational procedures
RIIOGD405A	Carry out well control and blow out prevention
RIIQUA201A	Maintain and monitor site quality standards
RIIVEH305A	Operate and maintain a four wheel drive vehicle

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RII31909 Certificate III in Drilling Oil/Gas (Off shore)

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as a derrickman who perform tasks involving a broad range of skilled applications applied in a wide variety of contexts, which may involve application of some discretion and judgement in selecting equipment, services or contingency measures.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of thirteen (13) units of competency made up of:

- ten (10) Core units, and
- three (3) elective units of which:
- at least one (1) must come from the Group A electives listed below
- up to one (1) from the Group B electives listed below
- up to one (1) unit may come from AQF level II, III or IV in this, or any other Training Package.

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBCMN311B	Maintain workplace safety
MSAPMSUP172A	Identify and minimise environmental hazards
RIICOM201A	Communicate in the workplace
RIIERR304A	Control emergencies and critical situations
RIIOGD209A	Operate and maintain ancillary equipment
RIIOGD301A	Conduct and maintain derrick operations
RIIOGD302A	Trip casing
RIIOGD303A	Trip pipe
RIIQUA201A	Contribute to quality work outcomes
RIIRIS301B	Apply risk management processes
Group A electives	
Unit code	*Unit title*
RIIOGD304A	Apply effective coal seam gas control practices
RIIOGD305A	Apply blow out prevention operational procedures

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RIIOGF301A	Monitor, operate and maintain mud pits and equipment
RIIOGF302A	Operate drilling fluids and mud pits
Group B electives	
Unit code	*Unit title*
HLTFA301C	Apply first aid
HLTFA402C	Apply advanced first aid
TAEDEL301A	Provide work skill instruction

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RII32009 Certificate III in Drilling Oil/Gas (On shore)

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as a derrickman who perform tasks involving a broad range of skilled applications applied in a wide variety of contexts, which may involve application of some discretion and judgement in selecting equipment, services or contingency measures.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• speak clearly and directly • listen carefully to instructions and information • read and interpret work instructions and safety signs • calculate basic weights, distances and volumes • complete incident and maintenance reports • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• apply teamwork in a range of situations, particularly in a safety context • contribute to the planning and execution of operations • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds
Problem-solving	• adjust work methods in response to changing weather and site conditions • participate in team solutions to safety issues
Initiative and enterprise	• independently adapt to changing work conditions or different work areas • identify potential improvements to working practice and conditions • identify and assess risks in the workplace
Planning and organising	• manage time and priorities to complete work • identify and obtain appropriate equipment and permits • identify potential hazards and prepare appropriate responses • follow procedures and techniques relevant to the equipment and work being done
Self-management	• take responsibility for planning and organising own work priorities and completing assigned tasks • monitor own performance to ensure work will be completed well and on time • understand the standard of work expected at a work site
Learning	• be willing to learn new ways of working • seek information to improve performance from people and

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	workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures
Technology	• use technology to monitor and report on work progress • use communications technology appropriate to the workplace (email, mobile, radio, etc) • operate equipment safely

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of fourteen (14) units of competency made up of:

- ten (10) Core units, and
- four (4) elective units of which:
- at least two (2) must come from the Group A electives list below
- up to two (2) units may come from the Group B electives, or from AQF level II, III or IV in this, or any other Training Package.

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBCMN311B	Maintain workplace safety
BSBFLM303C	Contribute to effective workplace relationships
MSAPMSUP172A	Identify and minimise environmental hazards
RIIERR302A	Respond to local emergencies and incidents
RIIOGD209A	Operate and maintain ancillary equipment
RIIOGD301A	Conduct and maintain derrick operations
RIIOGD302A	Trip casing
RIIOGD303A	Trip pipe
RIIOGN302A	Operate mud pumps
RIIOGN303A	Operate mud systems
Group A electives	
Unit code	*Unit title*
MSAPMPER300C	Issue work permits
PMASUP236B	Operate vehicles in the field
RIIOGD205A	Support blowout prevention operations

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RIIOGD206A	Assist with coal seam gas control
RIIOGD203A	Prepare and operate drilling fluid systems
Group B electives	
Unit code	*Unit title*
RIIOHS202A	Enter and work in confined spaces
RIIOHS204A	Work safely at heights
RIISAM204B	Operate small plant and equipment
TAEDEL301A	Provide work skill instruction

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RII40109 Certificate IV in Surface Extraction Operations

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as a supervisor or team leader working in an open cut mine or quarry. They perform tasks involving a broad range of varied activities most of which are complex and non-routine. They are responsible for the quantity and quality of the output of others, contribute to the development of technical solutions to non-routine problems and apply safety management plans to the workplace.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds • provide feedback and advice to staff • participate in site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • work with staff to solve problems and coordinate team members' responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • participate in ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team

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	• identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes
Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • participate in and, where appropriate, lead change processes • work with staff to create learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.
Successful completion of thirteen (13) units of competency made up of:

- five (5) core units, and
- eight (8) elective units of which:
- at least two (2) must come from the Group A electives listed below
- up to four (4) from the Group B electives listed below
- up to two (2) unit may come from AQF level III, IV or Diploma in this, or any other Training Package.

Units of competency chosen must be relevant to the competency requirements for the job function.
Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBSUS301A	Implement and monitor environmentally sustainable work practices
RIICOM301B	Communicate information
RIIGOV401B	Apply, monitor and report on compliance systems
RIIRIS401B	Apply site risk management system
	And either
BSBOHS407A	Monitor a safe workplace
	OR

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RIIOHS402A	Examine and maintain mine safety
Group A electives	
Unit code	*Unit title*
RIIBLA401A	Manage blasting operations
RIIBHD401A	Supervise blast hole drilling operations
RIICAR401A	Supervise rehabilitation operations
RIIERR302A	Respond to local emergencies and incidents ***(Mandatory for Coal)***
RIIERR401B	Apply and monitor surface operations emergency preparedness and response systems ***(Mandatory for Coal)***
RIIMEX401A	Apply pit plan
RIIMEX402A	Supervise dredging operations
RIIMEX404B	Apply and monitor systems for stable mining
RIIMEX405A	Apply and monitor systems and methods of surface coal mining
RIIMPO401A	Supervise mobile plant operations
RIIMPO403A	Monitor the interaction of heavy and light vehicles and mining equipment
RIIPRO401A	Supervise processing operations
RIIPRO402A	Supervise recycled materials operations
RIIRAI401A	Apply and monitor mine services and infrastructure systems
RIIRAI402A	Apply and monitor site plant and resource management plan
RIISRM401A	Apply and monitor the site stockpile management plan
RIIWBP401A	Apply and monitor site waste and by-products management plan
RIIWMG401A	Apply and monitor the site water management plan
Group B electives	
Unit code	*Unit title*
BSBCUS401B	Coordinate implementation of customer service strategies

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BSBFIA402A	Report on financial activity
BSBINM401A	Implement workplace information system
BSBLED401A	Develop teams and individuals
BSBMGT401A	Show leadership in the workplace
BSBMGT402A	Implement operational plan
BSBSMB403A	Market the small business
BSBSMB404A	Undertake small business planning
BSBSMB402A	Plan small business finances
BSBWOR404B	Develop work priorities
HLTFA301C	Apply first aid
	OR

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RIIERR205A	Apply initial response first aid ***(Mandatory for Coal)***
ICAICT308A	Use advanced features of computer applications
RIIBLA301A	Conduct surface shotfiring operations
RIIBLA402A	Monitor and control the effects of blasting on the environment
RIICCR401A	Develop and maintain positive community relations
RIIENV401A	Supervise dust and noise control
RIIERR201A	Conduct fire team operations
RIIERR301A	Respond to mine incident
RIIERR310A	Provide support for rescue operations
RIIERR403A	Lead rescue team
RIIOHS301A	Conduct safety and health investigations
RIIOHS401A	Supervise work in confined spaces
RIIQUA401A	Apply quality management system on site
RIIRIS301B	Apply risk management processes
RIISAM401A	Apply site plant, equipment and infrastructure maintenance management plan
RIISAM402A	Supervise operation of electrical equipment and installations
RIISAM403A	Commission/recommission plant
TAEASS301B	Contribute to assessment
TAEASS401A	Plan and organise assessment
TAEASS402B	Assess competence
TAEASS403B	Participate in assessment validation
TAEDEL301A	Provide work skill instruction

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RII40212 Certificate IV in Surface Coal Mining (Open Cut Examiner)

Modification History

Change to packaging rule for imported or other units

Description

This qualification reflects the role of employees working as an open cut examiner in a surface coal mine. They perform tasks involving a broad range of varied activities most of which are complex and non-routine. They are responsible for the quantity and quality of the output of others and contribute to the development of technical solutions to non-routine problems.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds • provide feedback and advice to staff • participate in site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • work with staff to solve problems and coordinate team members' responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • participate in ongoing review and adjustment of operations against performance indicators and project milestones • identifies and comprehends relevant mathematical information in familiar activities or texts • selects and uses appropriate familiar mathematical problem-solving strategies to solve problems in familiar contexts
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative

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	approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes
Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • participate in and, where appropriate, lead change processes • work with staff to create learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of fourteen (14) units of competency made up of:

- ten (10) Core units, and
- four (4) elective units of which:
- at least three (3) must come from the Group A electives listed below
- up to one (1) from the Group B electives listed below, or from AQF level III, IV or Diploma in this, or any other Training Package .

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIBLA201A	Support shotfiring operations
	OR
RIIBLA301A	Conduct surface shotfiring operations
RIIBLA205A	Store, handle and transport explosives
BSBSUS301B	Implement and monitor environmentally sustainable work practices
RIIERR401B	Apply and monitor surface operations emergency preparedness and response procedures
RIIMEX405A	Apply and monitor systems and methods of surface coal mining
RIIMPO403A	Monitor interaction of heavy and light vehicles and mining equipment
RIIOHS301A	Conduct safety and health investigations
RIIOHS402A	Examine and maintain mine safety
RIIOHS404A	Implement and monitor health and hygiene management systems

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RIIRIS402A	Carry out the risk management processes
Group A electives	
Unit code	*Unit title*
RIIBHD301A	Conduct surface blast hole drilling operations
RIIMPO301C	Conduct hydraulic excavator operations
RIIMPO302B	Conduct hydraulic shovel operations
RIIMPO303A	Conduct rope shovel operations
RIIMPO304B	Conduct wheel loader operations
RIIMPO308B	Conduct tracked dozer operations
RIIMPO310B	Conduct grader operations
RIIMPO311B	Conduct haul truck operations
RIIMPO312A	Conduct scraper operations
RIIMPO329A	Conduct dragline operations
Group B Electives	
Unit code	*Unit title*
BSBCUS401A	Coordinate implementation of customer service strategies
BSBINM401A	Implement workplace information system
BSBINN301A	Promote innovation in a team environment
BSBLED401A	Develop teams and individuals
BSBMGT401A	Show leadership in the workplace
BSBMGT402A	Implement operational plan
BSBWOR404B	Develop work priorities
RIICOM301B	Communicate information
RIIERR403A	Lead rescue team
RIIMPO401A	Supervise mobile plant operations

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RIIMPO402A	Apply the principles of earthworks construction
TAEASS401A	Plan and organise assessment
TAEASS402B	Assess competence

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RII40311 Certificate IV in Metalliferous Mining Operations (Underground)

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as a supervisor/team leader in an underground metalliferous mine. They perform tasks involving a broad range of varied activities most of which are complex and non-routine. They are responsible for the quantity and quality of the output of others, contribute to the development of technical solutions to non-routine problems and apply mine management plans to the workplace. This qualification is not applicable to coal mining.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds • provide feedback and advice to staff • participate in site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • work with staff to solve problems and coordinate team members' responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • participate in ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work

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	• ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes
Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • participate in and, where appropriate, lead change processes • work with staff to create learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of a total of fifteen (15) units of competency, made up of:

- eight (8) Core units of competency, and
- seven (7) Group A electives units, including at least six (6) from the list of Group A electives, and up to one (1) from AQF level III, IV or Diploma in this or any other, Training Package.

Units of competency chosen must be relevant to the competency requirements for the job function..

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIICOM301B	Communicate information
RIIQUA201A	Maintain and monitor site quality standards
RIIGOV401B	Apply, monitor and report on compliance systems
RIIMEX404B	Apply and monitor systems for stable mining
BSBOHS407A	Monitor a safe workplace
RIIOHS301A	Conduct safety and health investigations
RIIRIS301B	Apply risk management processes
BSBSUS301A	**Implement and monitor environmentally sustainable work practices**
Group A electives	
Unit code	*Unit title*
BSBINM401A	Implement workplace information system

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BSBINN301A	Promote innovation in a team environment
BSBLED401A	Develop teams and individuals
BSBMGT401A	Show leadership in the workplace
BSBMGT402A	Implement operational plan
BSBMGT403A	Implement continuous improvement
BSBWOR404B	Develop work priorities
HLTFA301C	Apply first aid
RIIBLA304A	Conduct underground production shotfiring
RIIBLA303A	Conduct underground development shotfiring
RIIBLA401A	Manage blasting operations
RIIBLA402A	Monitor and control the effects of blasting on the environment
RIICOM201A	Communicate in the workplace
RIIERR404A	Apply and monitor underground metalliferous mine emergency preparedness and response systems
RIIERR403A	Lead rescue team
RIIMEX406A	Apply and monitor mine transport system and production equipment
RIIOHS401A	Supervise work in confined spaces
RIIRAI401A	Apply and monitor mine services and infrastructure systems
RIIRIS402A	Carry out the risk management processes
RIISAM403A	Commission/recommission plant
RIIUND401B	Apply and monitor the ventilation management plan
TAEASS301B	Contribute to assessment
TAEASS401A	Plan and organise assessment
TAEASS402B	Assess competence

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TAEASS403B	Participate in assessment validation
TAEDEL301A	Provide work skill instruction

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RII40412 Certificate IV in Underground Coal Operations

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as mine supervisor, team leader or deputy, in an underground coal mine who perform tasks involving a broad range of varied activities most of which are complex and non-routine. They are responsible for the quantity and quality of the output of others, contribute to the development of technical solutions to non-routine problems and apply safety management plans to the workplace.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds • provide feedback and advice to staff • participate in site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • work with staff to solve problems and coordinate team members' responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • participate in ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work

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	• ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes
Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • participate in and, where appropriate, lead change processes • work with staff to create learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of thirteen (13) units of competency made up of:

- ten (10) core units, and
- three (3) elective units of which:
- at least one (1) must come from the Group A electives listed below
- up to two (2) from the Group B electives listed below
- up to one (1) unit may come from AQF level III, IV or Diploma in this, or any other Training Package.

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIBLA202B	Support underground shotfiring operations
	OR

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RIIBLA302A	Conduct shotfiring operations in underground coal mines
RIIERR402A	Apply and monitor underground coal mine emergency preparedness and response systems
RIIMCU403A	Apply and monitor the gas management plan
RIIMCU406A	Apply and monitor the inrush management plan
RIIMCU407A	Apply and monitor the strata management plan
RIIMCU408A	Apply the spontaneous combustion management plan
RIIMEX406A	Apply and monitor mine transport system and production equipment
RIIRAI401A	Apply and monitor mine services and infrastructure systems
RIIRIS402A	Carry out the risk management processes
RIIUND401B	Apply and monitor the ventilation management plan
Group A	
Unit code	*Unit title*
RIIMCU303A	Conduct continuous miner operations
RIIMCU304A	Conduct shuttle car operations
RIIMCU305A	Conduct outburst mining operations
RIIMCU306A	Conduct shearer operations
RIIMCU307A	Conduct longwall face equipment operations
RIIMCU401A	Conduct special roadway operations
RIIMCU404A	Apply and monitor the gas drainage management plan
RIIMCU405A	Apply and monitor the outburst management plan
RIIUND304A	Recover equipment
Group B electives	
Unit code	*Unit title*
BSBCUS401B	Coordinate implementation of customer service strategies

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BSBINN301A	Promote innovation in a team environment
BSBLED401A	Develop teams and individuals
BSBMGT401A	Show leadership in the workplace
BSBMGT402A	Implement operational plan
BSBMGT403A	Implement continuous improvement
BSBOHS407A	Monitor a safe workplace
BSBWOR404B	Develop work priorities
RIICOM301B	Communicate information
RIIERR403A	Lead rescue team
RIILAT401A	Provide leadership in the supervision of Indigenous Australian employees
RIIOHS301A	Conduct safety and health investigations

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RII40509 Certificate IV in Resource Processing

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as a supervisor or team leader working in a metal or coal processing facility. They perform tasks involving a broad range of varied activities most of which are complex and non-routine. They are responsible for the quantity and quality of the output of others, contribute to the development of technical solutions to non-routine problems and apply safety management plans to the workplace.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds • provide feedback and advice to staff • participate in site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • work with staff to solve problems and coordinate team members' responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • participate in ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work

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	• ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes
Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • participate in and, where appropriate, lead change processes • work with staff to create learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.
Successful completion of twelve (12) units of competency made up of:

- five (5) Core units, and
- seven (7) elective units of which:
- at least one (1) must come from the Group A electives listed below
- up to four (4) from the Group B listed below
- up to two (2) units may come from AQF level III, IV or Diploma in this, or any other Training Package

Units of Competency chosen must be relevant to the competency requirements for the job function.
Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIICOM301B	Communicate information
RIIERR401B	Apply and monitor surface operations emergency preparedness and response systems
RIIGOV401B	Apply, monitor and report on compliance systems
RIIOHS301A	Conduct safety and health investigations
	And
RIIRIS301B	Apply risk management processes
	OR

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RIIRIS402A	Carry out the risk management processes
Group A electives	
Unit code	*Unit title*
PMAOPS411B	Manage plant shutdown and restart
RIIRAI401A	Apply and monitor mine services and infrastructure systems
RIIWMG402A	Monitor and coordinate waste and process water treatment
Group B electives	
Unit code	*Unit title*
BSBCUS401B	Coordinate implementation of customer service strategies
BSBINM401A	Implement workplace information system
BSBINN301A	Promote innovation in a team environment
BSBLED401A	Develop teams and individuals
BSBMGT401A	Show leadership in the workplace
BSBMGT402A	Implement operational plan
BSBMGT403A	Implement continuous improvement
BSBOHS407A	Monitor a safe workplace
BSBWOR404B	Develop work priorities
HLTFA301C	Apply first aid
HLTFA402C	Apply advanced first aid
PMASUP441C	Decommission plant
MSL925001A	Analyse data and report results
RIIERR205A	Apply initial response First Aid
RIIERR403A	Lead rescue team
RIIHAN401A	Organise and monitor wharf/terminal operations
RIIHAN402A	Process movement of containers and cargo

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RIIOHS401A	Supervise work in confined spaces
RIISAM403A	Commission/recommission plant
TAEASS301B	Contribute to assessment
TAEASS401A	Plan and organise assessment
TAEASS402B	Assess competence
TAEASS403B	Participate in assessment validation
TAEDEL301A	Provide work skill instruction

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RII40609 Certificate IV in Civil Construction Operations

Modification History

Not applicable.

Description

This qualification reflects the role of specialist civil construction personnel who perform technical specialist tasks. They perform tasks involving a broad range of varied activities most of which are complex and non-routine. They are responsible for applying the site work instructions and practices to ensure the quantity and quality of their outputs and contribute to the development of technical solutions for non-routine problems.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds • provide feedback and advice to staff • participate in site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • work with staff to solve problems and coordinate team members' responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • participate in ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work

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	• ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes
Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • participate in and, where appropriate, lead change processes • work with staff to create learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of twelve (12) units of competency made up of:

- four (4) Core units, and
- eight (8) elective units of which:
- at least four (4) from the Group A electives listed below
- at least two (2) must come from the Group B listed below
- up to one (1) unit may come from this, or any other Training Package or accredited course.

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIENV402A	Implement and monitor environmental policies
BSBOHS407A	Monitor a safe workplace
RIIQUA401A	Apply a quality management system on site
RIIRIS301B	Apply risk management processes
Group A electives	
Unit code	*Unit title*
RIICBS401B	Apply the principles for the asphalt paving and compaction
RIICBS402B	Apply the principles for the application of bituminous sprayed treatment
RIICBS403B	Apply the principles for the application of polymer modified binder
RIICBS404B	Apply the principles for the selection and use of bituminous emulsion
RIICBS405A	Apply the principles for the application of slurry surfacing
RIICBS406A	Apply the principles of pavement profiling using a profiler

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RIICBS407A	Apply the principles for the manufacture and delivery of hot mix asphalt
RIICBS408A	Apply the principles for the manufacture of cold mix
RIICBS409A	Apply the principles for the manufacture of polymer modified binder
RIICBS410A	Apply the principles for the manufacture of bituminous emulsion
RIICBS411A	Apply the principles for the manufacture of slurry surfacing
RIICRC401A	Apply the principles of flexible pavement construction
RIICRC402A	Apply the principles of rigid pavement construction
RIICRC403A	Apply the principles of the stabilisation of materials
RIICRC404A	Inspect and report on pavement condition
RIICRC405A	Carry out pavement condition measurement
RIICRC406B	Apply the principles of pavement maintenance
RIICWD525B	Select pavement surfacing
RIICWM402A	Supervise civil works contractors
RIIDML401A	Apply the principles of demolitions
LGAWORK401A	Develop works maintenance schedule
LGAWORK402A	Prepare for operational works
LGAWORK403A	Manage civil plant and resources
LGACOM401A	Administer contracts
LGACOM402A	Arrange contracts
LGACOM409A	Prepare tender documentation
LGACOM410A	Prepare response to tenders
BSBPMG408A	Apply contract and procurement procedures
MSL953001A	Receive and prepare samples for testing

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MSL974001A	Prepare, standardise and use solutions
PMLTEST403B	Assist with geotechnical site investigations
MSL974003A	Perform chemical tests and procedures
MSL974005A	Perform physical tests
MSL974010A	Perform mechanical tests
MSL973001A	Perform basic tests
MSL973002A	Prepare working solutions
MSL973006A	Prepare trial batches for evaluation
MSL924001A	Process and interpret data
RIICPL401A	Apply the principles for the installation of underground service using open excavation
RIICTT401A	Apply the principles for the installation of underground services using trenchless technology
RIICTC401A	Apply the principles of tunnel construction
RIICSG401A	Apply the principles of civil concrete structures construction
RIICSG402A	Apply the principles of civil steel structures construction
RIICSG403A	Apply the principles of civil timber structures construction
RIICSG404A	Apply the principles of civil masonry, crib and gabion structure construction
RIICSG405A	Carry out inspections of civil structures
RIICSG406A	Apply principles of maintenance of civil structures
RIIMEX403A	Apply the principles of canal construction
RIIMPO402A	Apply the principles of earthworks construction
RIIBLA301A	Conduct surface shotfiring operations
Group B electives	
Unit code	*Unit title*
BSBMGT402A	Implement operational plan

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BSBMGT403A	Implement continuous improvement
RIICCR401A	Develop and maintain positive community relations
RIICOM301B	Communicate information
RIIGOV401B	Apply, monitor and report on compliance systems

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RII40712 Certificate IV in Civil Construction Supervision

Modification History

Not applicable.

Description

This qualification reflects the role of employees working in supervisory positions in civil construction. They perform tasks involving a broad range of varied activities most of which are complex and non-routine. They are responsible for the quantity and quality of the output of others, contribute to the development of technical solutions to non-routine problems and apply management plans to the workplace.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds • provide feedback and advice to staff • participate in site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • work with staff to solve problems and coordinate team members' responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • participate in ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work

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	• ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes
Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • participate in and, where appropriate, lead change processes • work with staff to create learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification
The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of twelve (12) units of competency made up of:

- four (4) Core units, and
- eight (8) elective units of which:

at least two (2) must come from the Group A electives listed below including ***either*** RIICWM401B Supervise civil works ***or*** at least one AQF IV *Apply the principles* unit of competency

- at least two (2) from the Group B electives listed below
- up to one (1) unit may come from AQF level III, IV or Diploma in this, or any other, Training Package or accredited course.

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBMGT401A	Show leadership in the workplace
BSBMGT402A	Implement operational plan
BSBOHS407A	Monitor a safe workplace
RIIRIS401A	Apply site risk management system
Group A electives	
Unit code	*Unit title*
LGAWORK401A	Develop works maintenance schedule
LGAWORK402A	Prepare for operational works
MSL924001A	Process and interpret data

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MSL975007A	Supervise earthworks inspection, sampling and testing operations
MSL975016A	Perform complex tests to measure engineering properties of materials
RIIBLA401A	Manage blasting operations
RIIBLA402A	Monitor and control the effects of blasting on the environment
RIICBS401B	Apply the principles of asphalt paving and compaction
RIICBS402B	Apply the principles for the application of bituminous sprayed treatment
RIICBS403B	Apply the principles for the application of polymer modified binder
RIICBS404B	Apply the principles for the selection and use of bituminous emulsion
RIICBS405A	Apply the principles for the application of slurry surfacing
RIICBS406A	Apply the principles of pavement profiling using a profiler
RIICBS407A	Apply the principles for the manufacture and delivery of hot mix asphalt
RIICBS408A	Apply the principles for the manufacture of cold mix
RIICBS409A	Apply the principles for the manufacture of polymer modified binder
RIICBS410A	Apply the principles for the manufacture of bituminous emulsion
RIICBS411A	Apply the principles for the manufacture of slurry surfacing
RIICPL401A	Apply the principles for the installation of underground service using open excavation
RIICRC401A	Apply the principles of flexible pavement construction
RIICRC402A	Apply the principles of rigid pavement construction
RIICRC403A	Apply the principles of the stabilisation of materials
RIICRC404A	Inspect and report on pavement condition
RIICRC405A	Carry out pavement condition measurement
RIICRC406B	Apply the principles of pavement maintenance
RIICSG401A	Apply the principles of civil concrete structures construction
RIICSG402A	Apply the principles of civil steel structures construction

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RIICSG403A	Apply the principles of civil timber structures construction
RIICSG404A	Apply the principles of civil masonry, crib and gabion structure construction
RIICSG405A	Carry out inspections of civil structures
RIICSG406A	Apply principles of maintenance of civil structures
RIICTC401A	Apply the principles of tunnel construction
RIICTT401A	Apply the principles for the installation of underground services using trenchless technology
RIICTT402A	Apply the principles for the repair and rehabilitation of underground services using trenchless technology
RIICWD525B	Select pavement surfacing
RIICWM401B	Supervise civil works
RIICWM402A	Supervise civil works contractors
RIICWM503A	Prepare civil works cost estimate
RIICWM504A	Prepare civil works bill of quantities
RIICWM505A	Prepare civil works schedule of rates
RIIDML401A	Apply the principles of demolitions
RIIMEX403A	Apply the principles of canal construction
RIIMPO402A	Apply the principles of earthworks construction
Group B electives	
Unit code	*Unit title*
BSBCUS401B	Coordinate implementation of customer service strategies
BSBFIA402A	Report on financial activity
BSBFIM501A	Manage budgets and financial plans
BSBINM401A	Implement workplace information system
BSBINN301A	Promote innovation in a team environment
BSBLED401A	Develop teams and individuals

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BSBMGT403A	Implement continuous improvement
BSBPMG405A	Apply human resources management approaches
BSBPMG408A	Apply contract and procurement procedures
BSBPMG510A	Manage projects
BSBSMB403A	Market the small business
BSBSMB404A	Undertake small business planning
BSBSMB402A	Plan small business finances
BSBSUS301A	Implement and monitor environmentally sustainable work practices
BSBWOR404B	Develop work priorities
LGADMIN417A	Conduct community consultations
LGACOM401A	Administer contracts
LGACOM402A	Arrange contracts
LGACOM409A	Prepare tender documentation
LGACOM410A	Prepare response to tenders
MSL953001A	Receive and prepare samples for testing
MSL973001A	Perform basic tests
MSL973002A	Prepare working solutions
MSL973006A	Prepare trial batches for evaluation
MSL974001A	Prepare, standardise and use solutions
PMLTEST403B	Assist with geotechnical site investigations
MSL974003A	Perform chemical tests and procedures
MSL974005A	Perform physical tests
MSL974010A	Perform mechanical tests
NWP440A	Supervise conduit inspection and reporting (for supervisors and managers)
RIICCR401A	Develop and maintain positive community relations

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RIICOM301B	Communicate information
RIICWD503A	Prepare work zone traffic management plan
RIIENV401A	Supervise dust and noise control
RIIGOV401B	Apply, monitor and report on compliance systems
RIIOHS302A	Implement traffic management plan
RIIOHS401A	Supervise work in confined spaces
RIIQUA401A	Apply a quality management system on site
RIIRAI402A	Apply and monitor site plant and resource management plan
RIIRIS301B	Apply risk management processes
RIISAM401A	Apply site plant, equipment and infrastructure management plan
TAEDEL301A	Provide work skill instruction

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RII40809 Certificate IV in Civil Construction Design

Modification History

Not applicable.

Description

This qualification reflects the role of people providing design support for professional engineers. They perform tasks involving a broad range of varied activities most of which are complex and non-routine, for example, this might include Civil Works drafting. They are responsible for applying the design work instructions and practices to ensure the quantity and quality of the output of others and contribute to the development of technical solutions to non-routine problems.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds • provide feedback and advice to staff • participate in site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • work with staff to solve problems and coordinate team member's responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • participate in ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work

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	• ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes
Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • participate in, and where appropriate, lead change processes • work with staff to create learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of twelve (12) units of competency made up of:

- a minimum of two (2) units of competency from Group A units listed
- a minimum of two (2) units of competency from Group B Drafting units listed
- a minimum of two (2) units of competency from Group C Design units listed
- a minimum of two (2) units of competency from Group D Technical units listed
- up to one (1) unit may come from this, or any other Training Package or accredited course.

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Group A Units	
Unit code	*Unit title*
BSBINM401A	Implement workplace information system
BSBINN301A	Promote innovation in a team environment
BSBMGT401A	Show leadership in the workplace
BSBMGT403A	Implement continuous improvement
BSBWOR401B	Establish effective workplace relationships
BSBWOR404B	Develop work priorities
Group B Drafting Units	
Unit code	*Unit title*
MEM09011B	Apply basic engineering design concepts
MEM30001A	Use computer aided drafting systems to produce basic engineering drawings
MEM30002A	Produce basic engineering graphics
MEM30003A	Produce detailed engineering drawings

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MEM30004A	Use CAD to create and display 3D models
Group C Design Units	
Unit code	*Unit title*
RIICWD501A	Prepare detailed design of foundations
RIICWD502A	Prepare detailed design of lighting
RIICWD504A	Prepare detailed design of environmental controls
RIICWD505A	Prepare detailed design of landscaping
RIICWD506A	Prepare detailed design of canals
RIICWD507A	Prepare detailed geotechnical design
RIICWD508A	Prepare detailed design of rural roads
RIICWD511A	Prepare detailed design of sub-divisions
RIICWD513A	Prepare detailed design of rail civil infrastructure
RIICWD514A	Prepare detailed design of dams
RIICWD515A	Prepare detailed design of airfield civil works
RIICWD516A	Prepare detailed design of bicycle ways
RIICWD517A	Prepare detailed design of industrial hardstands
RIICWD518A	Prepare detailed design of open car parks
RIICWD519A	Prepare detailed design of inter modal facilities civil works
RIICWD521A	Prepare detailed design of flexible pavements
RIICWD522A	Prepare stabilised material mix design
RIICWD523A	Prepare asphalt mix design
RIICWD524B	Prepare design of spray seal surfacing
RIICWD525B	Select pavement surfacing
RIICWD527A	Prepare detailed design of traffic signals
RIICWD529A	Prepare detailed design of underground services

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RIICWD530A	Prepare detailed design of surface drainage
RIICWD531A	Prepare detailed design of subsurface drainage
RIICWD537A	Prepare detailed design of marine structures civil works
Group D Technical Units	
Unit code	*Unit title*
MSL924001A	Process and interpret data
PMLTEST403B	Assist with geotechnical site investigations
MSL974003A	Perform chemical tests and procedures
MSL974005A	Perform physical tests
MSL974010A	Perform mechanical tests
MSL975007A	Supervise earthworks inspection, sampling and testing operations
MSL975016A	Perform complex tests to measure engineering properties of materials
CPPSIS5032A	Capture new spatial data
CPPSIS5035A	Obtain and validate existing spatial data
CPPSIS5036A	Integrate spatial datasets
CPPSIS3015A	Collect basic spatial data
RIICBS401B	Apply the principles for the asphalt paving and compaction
RIICBS402B	Apply the principles for the application of bituminous sprayed treatment
RIICBS403B	Apply the principles for the application of polymer modified binder
RIICBS404B	Apply the principles for the selection and use of bituminous emulsion
RIICBS405A	Apply the principles for the application of slurry surfacing
RIICBS406A	Apply the principles of pavement profiling using a profiler
RIICBS407A	Apply the principles for the manufacture and delivery of hot mix asphalt
RIICBS408A	Apply the principles for the manufacture of cold mix
RIICBS409A	Apply the principles for the manufacture of polymer modified binders

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RIICBS410A	Apply the principles for the manufacture of bituminous emulsion
RIICBS411A	Apply the principles for the manufacture of slurry surfacing
RIICPL401A	Apply the principles for the installation of underground service using open excavation
RIICRC401A	Apply the principles of flexible pavement construction
RIICRC402A	Apply the principles of rigid pavement construction
RIICRC403A	Apply the principles of the stabilisation of materials
RIICRC404A	Inspect and report on pavement condition
RIICRC405A	Carry out pavement condition measurement
RIICSG401A	Apply the principles of civil concrete structures construction
RIICSG402A	Apply the principles of civil steel structures construction
RIICSG403A	Apply the principles of civil timber structures construction
RIICSG404A	Apply the principles of civil masonry, crib and gabion structure construction
RIICTC401A	Apply the principles of tunnel construction
RIICTT401A	Apply the principles for the installation of underground services using trenchless technology
RIICTT402A	Apply the principles for the repair and rehabilitation of underground services using trenchless technology
RIIMEX403A	Apply the principles of canal construction
RIIMPO402A	Apply the principles of earthworks construction
RIISTD202A	Collect routine site samples

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RII40909 Certificate IV in Drilling Operations

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as senior drillers. They perform tasks involving a broad range of varied activities most of which are complex and non-routine. They are responsible for the quantity and quality of the output of others and contribute to the development of technical solutions to non-routine problems.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds • provide feedback and advice to staff • participate in site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • work with staff to solve problems and coordinate team members' responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • participate in ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work

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	• ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes
Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • participate in and, where appropriate, lead change processes • work with staff to create learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of eleven (11) units of competency made up of:

- seven (7) Core units, and
- four (4) elective units of which:
- at least one (1) must come from the Group A electives listed below
- up to three (3) from the Group B electives listed below
- up to one (1) unit may come from AQF level III, IV or Diploma in this, or any other Training Package

Units of competency chosen must be relevant to the competency requirements for the job function.

Core units of competency	
Unit code	*Unit title*
BSBMGT401A	Show leadership in the workplace
BSBMGT402A	Implement operational plan
BSBOHS407A	Monitor a safe workplace
RIIBEF402A	Supervise on-site operations
RIIENV402A	Implement and monitor environmental policies
RIINHB401A	Plan and supervise mobilization of equipment, crew and materials
RIIRIS401A	Apply site risk management system
Group A electives	
Unit code	*Unit title*
RIIBEF401A	Manage non-routine complex technical situations
RIINHB402A	Supervise mineral exploration drilling operations
RIINHB403A	Supervise geotechnical drilling operations
RIINHB404A	Supervise seismic drilling operations

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RIINHB405A	Supervise water well drilling operations
RIINHB406A	Supervise foundation drilling operations
RIINHB407A	Supervise horizontal directional drilling operations
RIINHB408A	Supervise environmental drilling operations
RIINHB409A	Supervise mineral production and development drilling operations
RIINHB410A	Supervise surface directional drilling operations
RIINHB411A	Construct artesian (flowing) aquifer production bores
RIINHB412B	Construct geothermal wells
RIINHB413A	Supervise underground in-seam directional drilling operations

Group B electives

Unit code	*Unit title*
BSBCUS401B	Coordinate implementation of customer service strategies
BSBFIM501A	Manage budgets and financial plans
BSBLED401A	Develop teams and individuals
BSBRKG403C	Set up a business or records system for a small office
BSBSMB403A	Market the small business
BSBSMB404A	Undertake small business planning
BSBSMB402A	Plan small business finances
BSBSMB405A	Monitor and manage small business operations
HLTFA301C	Apply first aid
HLTFA402C	Apply advanced first aid

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RIIERR401B	Apply and monitor surface operations emergency preparedness and response systems
RIIFIA401A	Manage financial records
RIIOGD405A	Carry out well control and blow out prevention
RIIQUA401A	Apply a quality management system on site
RIISAM401A	Apply site plant, equipment and infrastructure maintenance plan
TAEASS401A	Plan and organise assessment
TAEASS402B	Assess competence
TAEASS403B	Participate in assessment validation

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RII41009 Certificate IV in Drilling Oil/Gas (Off shore)

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as senior drillers working in an oil/gas context. They perform tasks involving a broad range of varied activities most of which are complex and non-routine. They are responsible for the quantity and quality of the output of others and contribute to the development of technical solutions to non-routine problems.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds • provide feedback and advice to staff • participate in site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • work with staff to solve problems and coordinate team member's responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • participate in ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work

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	• ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes
Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • participate in, and where appropriate, lead change processes • work with staff to create learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of thirteen (13) units of competency made up of:

- twelve (12) Core units, and
- one (1) elective units of which:
- up to one (1) from the Group A electives listed below
- up to one (1) unit may come from AQF level III, IV or Diploma in this, or any other Training Package

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBMGT401A	Show leadership in the workplace
BSBOHS407A	Monitor a safe workplace
BSBSUS201A	Participate in environmentally sustainable work practices
RIIERR304A	Control emergencies and critical situations
RIIOGD401A	Rig up, conduct pre-spud operations and rig down
RIIOGD402A	Participate in nippling-up and pressure test
RIIOGD403A	Conduct drilling operations
RIIOGD404A	Coordinate air drilling operations
RIIOGD405A	Carry out well control and blowout prevention
RIIQUA401A	Apply a quality management system on site
RIIRIS402A	Carry out risk management processes
RIISAM314A	Manage oil and gas drilling equipment maintenance
Group A electives	
Unit code	*Unit title*
HLTFA301C	Apply First Aid

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HLTFA402C	Apply advanced First Aid
RIIERR311A	Assess and implement life support systems and stabilise casualties

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RII41109 Certificate IV in Drilling Oil/Gas (On shore)

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as senior drillers working in an on shore oil/gas context. They perform tasks involving a broad range of varied activities most of which are complex and non-routine. They are responsible for the quantity and quality of the output of others and contribute to the development of technical solutions to non-routine problems.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field • adjust communication style to meet the needs of people with diverse backgrounds
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion and people with disability • recognise and respond sensitively to people from culturally and linguistically diverse backgrounds • provide feedback and advice to staff • participate in site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • work with staff to solve problems and coordinate team members' responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • participate in ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work

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	• ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes
Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • participate in and, where appropriate, lead change processes • work with staff to create learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of twelve (12) units of competency made up of:

- eight (8) Core units, and
- four (4) elective units of which:
- up to four (4) units may come from the Group A Electives listed, AQF level III, IV or Diploma level from this,or any other,Training Package

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBLED401A	Develop teams and individuals
RIIOHS405A	Maintain standard procedures and safe working practices
RIIERR304A	Control emergencies and critical situations
RIIOGD401A	Rig up, conduct pre-spud operations and rig down
RIIOGD402A	Participate in nippling-up and pressure test
RIIOGD403A	Conduct drilling operations
RIIOGD405A	Carry out well control and blow out prevention
RIIRIS301B	Apply risk management processes
Group A Electives	
Unit code	*Unit title*
RIIOGD304A	Apply effective coal seam gas control practices
RIIOGD305A	Apply blow out prevention operational procedures
RIIOGD404A	Coordinate air drilling operations
BSBCUS401B	Coordinate implementation of customer service strategies
HLTFA301C	Apply first aid

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HLTFA402C	Apply advanced first aid
MSAPMPER300C	Issue work permits
RIIERR401B	Apply and monitor surface operations emergency preparedness and response procedures
RIIQUA401A	Apply a quality management system on site
RIISAM314A	Manage oil and gas drilling equipment maintenance
TAEASS401A	Plan and organise assessment
TAEASS402B	Assess competence
TAEASS403B	Participate in assessment validation

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RII50109 Diploma of Surface Operations Management

Modification History

Not applicable.

Description

This qualification reflects the role of mine managers in an open cut coal or metalliferous mine or a quarry, who perform tasks involving a high level of autonomy and requiring the application of significant judgement in planning and determining the selection of equipment/roles/techniques for themselves and others. They are required to demonstrate the application of a broad range of technical, managerial, coordination and planning and implement safety management plans.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of thirteen (13) units of competency made up of:

- two(2) Core units, and
- eleven (11) elective units of which:
- at least four (4) must come from the Group A electives listed below
- up to five (5) from the Group B electives listed below
- up to two (2) units may come from AQF level IV, Diploma or Advanced Diploma in this, or any other Training Package

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIGOV501A	Identify, implement and maintain legal compliance requirements
RIIRIS501A	Implement and maintain management systems to control risk
Group A electives	
Unit code	*Unit title*
RIIENV501A	Implement and and maintain environmental management plan
RIIERR503A	Implement emergency preparedness and response systems
RIIMEX405A	Apply and monitor systems and methods of surface coal mining
RIIMEX501A	Implement pit plan
RIIMEX502A	Implement systems and methods of mining
RIIMEX503A	Manage dredging operations
RIIMPO502A	Manage the interaction of heavy and light vehicles and mining equipment
RIIMPO503A	Manage laser levelling of operating plant
RIIOHS404A	Implement and monitor health and hygiene management systems
RIIPRO501A	Implement site processing plant operations

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RIIPRO502A	Develop, implement and maintain process control systems
RIIRAI501B	Implement mine transport systems and production equipment
RIIRAI502A	Implement site plant and resource management plan
RIIRAI503B	Implement site services and infrastructure systems
RIIRAI504A	Select and install surface plant and equipment
RIIRAI506A	Implement, monitor, rectify and report on inventory control system
RIIRAI508A	Implement mine services systems
RIIRAI509A	Implement mine fixed plant and infrastructure systems
RIISDM501A	Conduct mine surveying operations
RIISRM501A	Implement the stockpile management plan
RIISRM502A	Design stockpile formations and reclaiming systems
RIIWBP501A	Implement site waste and by-product management plan
RIIWBP502A	Plan and monitor recycled material operations
RIIWMG501A	Implement the site water management plan
RIIRIS402A	Carry out the risk management processes
Group B electives	
Unit code	*Unit title*
BSBCUS501A	Manage quality customer service
BSBFIM501A	Manage budgets and financial plans
BSBINM501A	Manage an information or knowledge management system
BSBLED501A	Develop a workplace learning environment
BSBMGT515A	Manage operational plan
BSBMGT516A	Facilitate continuous improvement
BSBOHS407A	Monitor a safe workplace
BSBOHS509A	Ensure a safe workplace

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BSBSMB402A	Plan small business finances
BSBWOR501B	Manage personal work priorities and professional development
BSBWOR502B	Ensure team effectiveness
RIIBHD501A	Manage blast hole drilling operations
RIIBLA301A	Conduct surface shotfiring operations
RIIBLA601A	Design surface blasts
RIICCR501A	Conduct sales in construction materials operations
RIICOM301B	Communicate information
RIIENV502A	Undertake process or project environmental impact assessment
RIIERR504A	Manage major incidents and emergencies
RIIGOV401B	Apply, monitor and report on compliance systems
RIIOHS301A	Conduct safety and health investigations
RIIPRM501A	Implement, monitor, rectify and report on contracts
RIISAM501A	Implement and maintain the site plant, equipment and infrastructure maintenance plan

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RII50209 Diploma of Underground Metalliferous Mining Management

Modification History

Not applicable.

Description

This qualification reflects the role of mine managers in an underground metalliferous mine who perform tasks involving a high level of autonomy and requiring the application of significant judgement in planning and determining the selection of equipment/roles/techniques for themselves and others. They are required to demonstrate the application of a broad range of technical, managerial, coordination and planning and implement mine management plans.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of thirteen (13) units of competency made up of:

- seven (7) Core units, and
- six (6) elective units of which:
- at least three (3) must come from the Group A electives listed below
- up to three (3) from the Group B electives listed below
- up to one (1) unit may come from AQF level IV, Diploma or Advanced Diploma in this, or any other, Training Package

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIICOM301B	Communicate information
RIIERR503A	Implement emergency preparedness and response systems
RIIGOV501A	Identify, implement and maintain legal compliance requirements
RIIMEX502A	Implement systems and methods of mining
RIIOHS301A	Conduct safety and health investigations
RIIRAI501B	Implement mine transport systems and production equipment
RIIRAI503B	Implement site services and infrastructure systems
Group A electives	
Unit code	*Unit title*
RIIBHD501A	Manage blast hole drilling operations
RIIENV501A	Implement and maintain environmental management plan
RIIENV502A	Undertake process or project environmental impact assessment
RIIMEX501A	Implement pit plan
RIIPRO502A	Develop, implement and maintain process control systems

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RIISDM501A	Conduct mine surveying operations
RIISRM502A	Design stockpile formations and reclaiming systems
RIIUND501A	Implement the ventilation management plan
RIIWBP502A	Plan and monitor recycled material operations
RIIWMG501A	Implement the site water management plan
Group B electives	
Unit code	*Unit title*
BSBCUS501A	Manage quality customer service
BSBINM501A	Manage an information or knowledge management system
BSBINN502A	Build and sustain an innovative work environment
BSBLED501A	Develop a workplace learning environment
BSBMGT515A	Manage operational plan
BSBMGT516A	Facilitate continuous improvement
BSBOHS509A	Ensure a safe workplace
BSBWOR501B	Manage personal work priorities and professional development
BSBWOR502B	Ensure team effectiveness

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RII50309 Diploma of Minerals Processing

Modification History

Not applicable.

Description

This qualification reflects the role of metal or coal processing facility managers who perform tasks involving a high level of autonomy and requiring the application of significant judgement in planning and determining the selection of equipment/roles/techniques for themselves and others. They are required to demonstrate the application of a broad range of technical, managerial, coordination and planning and implement mine management plans.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of sixteen (16) units of competency made up of:

- eight (8) Core units, and
- eight (8) elective units of which:
- at least six (6) must come from the Group A electives listed below
- up to two (2) unit may come from AQF level IV, Diploma or Advanced Diploma in this, or any other Training Package or accredited course.

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBCUS501A	Manage quality customer service
BSBMGT516A	Facilitate continuous improvement
RIICOM301B	Communicate information
RIIENV501A	Implement and maintain environmental management plan
RIIERR503A	Implement emergency preparedness and response systems
RIIGOV501A	Identify, implement and maintain legal compliance requirements
RIIRIS402A	Carry out risk management processes
RIIWMG501A	Implement the site water management plan
Group A Electives	
Unit code	*Unit title*
BSBINM501A	Manage an information or knowledge management system
BSBINN502A	Build and sustain an innovative work environment
BSBLED501A	Develop a workplace learning environment

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BSBMGT515A	Manage operational plan
BSBOHS509A	Ensure a safe workplace
BSBSUS301A	Implement and monitor environmentally sustainable work practices
BSBWOR501B	Manage personal work priorities and professional development
BSBWOR502B	Ensure team effectiveness
RIIENV502A	Undertake process or project environmental impact assessment
RIIPRO502A	Develop, implement and maintain process control systems
RIIRAI501B	Implement mine transport systems and production equipment
RIIRAI503B	Implement site services and infrastructure systems
RIISRM502A	Design stockpile formations and reclaiming systems
RIIWBP502A	Plan and monitor recycled material operations

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RII50409 Diploma of Civil Construction Management

Modification History

Not applicable.

Description

The Diploma of Civil Construction Management reflects the role of personnel working on a single or a group of Civil Construction sites, who perform tasks involving a high level of autonomy and require the application of significant judgement in planning and determining the selection of equipment/roles/techniques for themselves and others. They are required to develop site specific work instructions and practices to ensure the implementation of the site management systems, plans and policies. They demonstrate the application of a broad range of technical, managerial, coordination and planning skills.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for the completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of thirteen (13) units made up of:

- six (6) Core units of competency including either RIICWM501A or RIICWM502A (unit not selected may be included as a Group A elective)
- seven (7) elective units to be completed made up of:
- at least five (5) units from the Group A electives units listed
- up to two (2) units, drawn from this or any other endorsed Training Package or accredited course at any level

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units	
Unit code	*Unit title*
BSBOHS509A	Ensure a safe workplace
BSBWOR502B	Ensure team effectiveness
RIIENV501A	Implement and maintain environmental management plan
RIIQUA501A	Implement, monitor and develop quality management plans
RIIRIS501A	Implement and maintain management systems to control risk
RIICWM501A	Implement civil construction plan
	or

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RIICWM502A	Implement civil works maintenance program
Group A elective units	
Unit code	*Unit title*
BSBCUS501A	Manage quality customer service
BSBFIM501A	Manage budgets and financial plans
BSBHRM506A	Manage recruitment selection and induction processes
BSBINM501A	Manage an information or knowledge management system
BSBINN502A	Build and sustain an innovative work environment
BSBLED501A	Develop a workplace learning environment
BSBMGT515A	Manage operational plan
BSBMGT516A	Facilitate continuous improvement
BSBPMG501A	Manage application of project integrative processes
BSBPMG502A	Manage project scope
BSBPMG503A	Manage project time
BSBPMG504A	Manage project costs
BSBPMG505A	Manage project quality
BSBPMG506A	Manage project human resources
BSBPMG507A	Manage project communications
BSBPMG508A	Manage project risk
BSBPMG509A	Manage project procurement
BSBWOR501B	Manage personal work priorities and professional development
BSBWRK509A	Manage industrial relations
LGACOM401A	Administer contracts
LGAWORK501A	Prepare preliminary design for operational works
LGAWORK502A	Prepare detailed works project documentation

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LGAWORK503A	Undertake project investigation
MSL925001A	Analyse data and report results
MSL975007A	Supervise earthworks inspection, sampling and testing operations
MSL975016A	Perform complex tests to measure engineering properties of materials
RIIBHD501A	Manage blast hole drilling operations
RIIBLA401A	Manage blasting operations
RIIBLA601A	Design surface blasts
RIICWD503A	Prepare work zone traffic management plan
RIICWM503A	Prepare civil works cost estimate
RIICWM504A	Prepare civil works bill of quantities
RIICWM505A	Prepare civil works schedule of rates
RIIRAI502A	Implement site plant and resource management plan
RIISAM501A	Implement and maintain the site plant, equipment and infrastructure maintenance plan

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RII50509 Diploma of Civil Construction Design

Modification History

Not applicable.

Description

The Diploma of Civil Construction Design reflects the role of personnel working as designers or design para-professionals who support professional engineers. They perform tasks involving a high level of autonomy and requiring the application of significant judgement in planning and determining the selection of equipment/roles/techniques for themselves and others. They are required to develop site specific work designs to ensure the implementation of the client's site requirements. They demonstrate the application of a broad range of technical, managerial, coordination and planning skills.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of twenty (20) units made up of:

- a minimum of four (4) units from the Group A units listed
- a minimum of two (2) units from the Group B Drafting units listed
- a minimum of four (4) units of competency from the Group C Design units listed
- a minimum of four (4) units of competency from the Group D Technical units listed
- a maximum of two (2) units at Certificate IV, Diploma, or Advanced Diploma level, may come from this, or any other Training Package or accredited course

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Note: The units chosen to satisfy the Diploma of Civil Construction Design must be additional to the units achieved to satisfy the Certificate IV in Civil Construction Design.

Group A units	
Unit code	*Unit title*
BSBCUS501A	Manage quality customer service
BSBINM501A	Manage an information or knowledge management system
BSBMGT608B	Manage innovation and continuous improvement
BSBPMG503A	Manage project time
BSBPMG505A	Manage project quality
BSBPMG508A	Manage project risk
BSBPMG509A	Manage project procurement
BSBWOR501B	Manage personal work priorities and professional development
BSBWOR502B	Ensure team effectiveness
Group B Drafting units	
Unit code	*Unit title*

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MEM09011B	Apply basic engineering design concepts
MEM30001A	Use computer aided drafting systems to produce basic engineering drawings
MEM30002A	Produce basic engineering graphics
MEM30003A	Produce engineering drawings
MEM30004A	Use CAD to create and display 3D models
Group C Design units	
Unit code	*Unit title*
RIICWD501A	Prepare detailed design of foundations
RIICWD502A	Prepare detailed design of lighting
RIICWD504A	Prepare detailed design of environmental controls
RIICWD505A	Prepare detailed design of landscaping
RIICWD506A	Prepare detailed design of canals
RIICWD507A	Prepare detailed geotechnical design
RIICWD508A	Prepare detailed design of rural roads
RIICWD509A	Prepare detailed design of urban roads
RIICWD510A	Prepare detailed design of busways
RIICWD511A	Prepare detailed design of sub-divisions
RIICWD512A	Prepare detailed design of motorways and interchanges
RIICWD513A	Prepare detailed design of rail civil infrastructure
RIICWD514A	Prepare detailed design of dams
RIICWD515A	Prepare detailed design of airfield civil works
RIICWD516A	Prepare detailed design of bicycle ways
RIICWD517A	Prepare detailed design of industrial hardstands
RIICWD518A	Prepare detailed design of open car parks
RIICWD519A	Prepare detailed design of inter modal facilities civil works

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RIICWD520A	Prepare detailed design of rigid pavements
RIICWD521A	Prepare detailed design of flexible pavements
RIICWD522A	Prepare stabilised material mix design
RIICWD523A	Prepare asphalt mix design
RIICWD524B	Prepare design of spray seal surfacing
RIICWD525B	Select pavement surfacing
RIICWD526A	Prepare detailed traffic analysis
RIICWD527A	Prepare detailed design of traffic signals
RIICWD528A	Prepare detailed design of traffic management systems
RIICWD529A	Prepare detailed design of underground services
RIICWD530A	Prepare detailed design of surface drainage
RIICWD531A	Prepare detailed design of subsurface drainage
RIICWD532A	Prepare detailed design of tunnels
RIICWD533A	Prepare detailed design of civil concrete structures
RIICWD534A	Prepare detailed design of civil steel structures
RIICWD535A	Prepare detailed design of civil timber structures
RIICWD536A	Prepare detailed design of civil masonry, crib and gabion structures
RIICWD537A	Prepare detailed design of marine structures civil works
Group D Technical units	
Unit code	*Unit title*
MSL925001A	Analyse data and report results
MSL975007A	Supervise earthworks inspection, sampling and testing operations
MSL975016A	Perform complex tests to measure engineering properties of materials
CPPSIS5032A	Capture new spatial data
CPPSIS5035A	Obtain and validate existing spatial data

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CPPSIS5036A	Integrate spatial datasets
RIICBS401B	Apply the principles for the asphalt paving and compaction
RIICBS402B	Apply the principles for the application of bituminous sprayed treatment
RIICBS403B	Apply the principles for the application of polymer modified binder
RIICBS404B	Apply the principles for the selection and use of bituminous emulsion
RIICBS405A	Apply the principles for the application of slurry surfacing
RIICBS406A	Apply the principles of pavement profiling using a profiler
RIICBS407A	Apply the principles for the manufacture and delivery of hot mix asphalt
RIICBS408A	Apply the principles for the manufacture of cold mix
RIICBS409A	Apply the principles for the manufacture of polymer modified binders
RIICBS410A	Apply the principles for the manufacture of bituminous emulsion
RIICBS411A	Apply the principles for the manufacture of slurry surfacing
RIICPL401A	Apply the principles for the installation of underground service using open excavation
RIICRC401A	Apply the principles of flexible pavement construction
RIICRC402A	Apply the principles of rigid pavement construction
RIICRC403A	Apply the principles of the stabilisation of materials
RIICRC404A	Inspect and report on pavement condition
RIICSG401A	Apply the principles of civil concrete structures construction
RIICSG402A	Apply the principles of civil steel structures construction
RIICSG403A	Apply the principles of civil timber structures construction
RIICSG404A	Apply the principles of civil masonry, crib and gabion structure construction
RIICTC401A	Apply the principles of tunnel construction
RIICTT401A	Apply the principles for the installation of underground services using trenchless technology
RIICTT402A	Apply the principles for the repair and rehabilitation of underground services

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	using trenchless technology
RIIMEX403A	Apply the principles of canal construction
RIIMPO402A	Apply the principles of earthworks construction

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RII50609 Diploma of Drilling Operations

Modification History

Not applicable.

Description

This qualification reflects the role of employees such as senior drillers or field supervisors. They perform tasks involving a broad range of varied activities most of which are complex and non-routine. They are responsible for the quantity and quality of the output of others and contribute to the development of technical solutions to non-routine problems.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of eleven (11) units of competency made up of:

- ten (10) Core units, and
- one (1) Group A elective unit from the list below

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBCUS501A	Manage quality customer service
BSBMGT515A	Manage operational plan
BSBWOR502B	Ensure team effectiveness
BSBOHS509A	Ensure a safe workplace
RIIENV501A	Implement and maintain environmental management plan
RIIGOV501A	Identify, implement and maintain legal compliance requirements
RIINHB501A	Plan drilling
RIIRIS501A	Implement and maintain management systems to control risk
RIIPRM501A	Implement, monitor, rectify and report on contracts
RIISAM502B	Manage general drilling equipment maintenance
Group A electives	
Unit code	*Unit title*
RIINHB401A	Plan and supervise the mobilisation of equipment, crew and materials
RIINHB402A	Supervise mineral exploration drilling operations
RIINHB403A	Supervise geotechnical drilling operations
RIINHB404A	Supervise seismic drilling operations

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RIINHB405A	Supervise water well drilling operations
RIINHB406A	Supervise foundation drilling operations
RIINHB407A	Supervise horizontal directional drilling operations
RIINHB408A	Supervise environmental drilling operations
RIINHB409A	Supervise mineral production and development drilling operations
RIINHB410A	Supervise surface directional drilling operations
RIINHB411A	Construct artesian (flowing) aquifer production bores
RIINHB412B	Construct geothermal wells
RIINHB413A	Supervise underground in-seam directional drilling operations

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RII50709 Diploma of Drilling Oil/Gas (Off shore)

Modification History

Not applicable.

Description

This qualification reflects the role of a supervisor in an off shore drilling operation. The tasks performed involve a high level of autonomy and require the application of significant judgement in planning and determining the selection of equipment/roles/techniques for themselves and others. They are required to demonstrate the application of a broad range of technical, managerial, coordination and planning skills.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of fifteen (15) units of competency made up of:

- fourteen (14) Core units, and
- one (1) elective unit from Group A electives below or from AQF level IV, Diploma or Advanced Diploma in this, or any other, Training Package.

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBCUS501A	Manage quality customer service
BSBMGT515A	Manage operational plan
BSBOHS509A	Ensure a safe workplace
BSBWOR502B	Ensure team effectiveness
RIIENV501A	Implement and maintain environmental management plan
RIIERR504A	Manage major incidents and emergencies
RIIGOV501A	Identify, implement and maintain legal compliance requirements
RIIOGD501A	Manage rig operations
RIIOGD502A	Plan and evaluate rig operations
RIIOGD504A	Manage drilling operations
RIIQUA501A	Implement, monitor and develop quality management plans
RIIRIS501A	Implement and maintain management systems to control risk
RIIPRM501A	Implement, monitor, rectify and report on contracts
RIISAM502B	Manage general drilling equipment maintenance
Group A electives	

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Unit code	*Unit title*
RIIOGD503A	Oversee drilling operations

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RII50809 Diploma of Drilling Oil/Gas (On shore)

Modification History

Not applicable.

Description

This qualification reflects the role of a supervisor in a drilling operation. The tasks performed involve a high level of autonomy and require the application of significant judgement in planning and determining the selection of equipment/roles/techniques for themselves and others. They are required to demonstrate the application of a broad range of technical, managerial, coordination and planning skills.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of eleven (11) units of competency made up of:

- six (6) Core units, and
- five(5) elective units of which:
- at least two (2) must come from the Group A electives listed below
- at least one (1) from the Group B electives listed below
- up to one (1) unit may come from AQF level IV, Diploma or Advanced Diploma in this, or any other Training Package.

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIBEF401A	Manage non-routine, complex technical situations
RIIOGD501A	Manage rig operations
RIIOGD502A	Plan and evaluate rig operations
RIIOGD504A	Manage drilling operations
RIIOGD505A	Manage drilling induction and orientation
RIISAM502B	Manage general drilling equipment maintenance
Group A electives	
Unit code	*Unit title*
RIIOGD503A	Oversee drilling operations
RIIOGD506A	Manage rig move and camp move
RIIOGD507A	Manage and monitor rig-up and rig-up to spud operations
RIIOGD508A	Manage well completion and abandonment
Group B electives	
Unit code	*Unit title*

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BSBCUS501A	Manage quality customer service
BSBMGT515A	Manage operational plan
BSBOHS509A	Ensure a safe workplace
BSBWOR502B	Ensure team effectiveness
RIIENV501A	Implement and maintain environmental management plan
RIIGOV501A	Identify, implement and maintain legal compliance requirements
RIIQUA501A	Implement, monitor and develop quality management plans
RIIRIS501A	Implement and maintain management systems to control risk
RIIPRM501A	Implement, monitor, rectify and report on contracts

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RII50912 Diploma of Underground Coal Mining Management

Modification History

Not applicable.

Description

This qualification reflects the role of mine managers who work in an underground coal mine who perform tasks involving a high level of autonomy and requiring the application of significant judgement in planning and determining the selection of equipment/roles/techniques for themselves and others. They are required to demonstrate the application of a broad range of technical, managerial, coordination and planning and implement safety management plans.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • use computer technology to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification
The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.
Successful completion of twelve (12) units of competency made up of:
ten (10) Core units, and
two (2) elective units of which:
at least one (1) must come from the Group A electives listed below
up to one (1) from the Group B electives listed below
up to one (1) unit may come from AQF level IV, Diploma or Advanced Diploma in this, or any other Training Package
Units of competency chosen must be relevant to the competency requirements for the job function.
Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIERR501A	Implement underground coal mine emergency preparedness and response systems
RIIMCU501B	Implement the spontaneous combustion management plan
RIIMCU502A	Implement the gas management plan
RIIMCU505A	Implement the inrush management plan
RIIMCU506A	Implement strata management plan
RIIRAI501B	Implement mine transport systems and production equipment
RIIRAI503B	Implement site services and infrastructure systems
RIIRIS402A	Carry out the risk management processes
RIIUND501A	Implement the ventilation management plan
RIIBLA302A	Conduct shotfiring operations in underground coal mines
	OR

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RIIBLA202B	Support underground shotfiring operations
Group A electives	
Unit code	*Unit title*
BSBOHS407A	Monitor a safe workplace
RIICOM301B	Communicate information
RIIMCU503A	Implement the gas drainage management plan
RIIMCU504A	Implement the outburst management plan
RIIOHS301A	Conduct safety and health investigations
RIIRAI506A	Implement, monitor, rectify and report on inventory control system
RIIPRM501A	Implement, monitor, rectify and report on contracts
RIIUND603A	Manage, operate and maintain the mine ventilation system
Group B electives	
Unit code	*Unit title*
BSBFIM501A	Manage budgets and financial plans
BSBINN502A	Build and sustain an innovative work environment
BSBLED501A	Develop a workplace learning environment
BSBMGT515A	Manage operational plan
BSBMGT516A	Facilitate continuous improvement
BSBSMB402A	Plan small business finances
BSBWOR501B	Manage personal work priorities and professional development
BSBWOR502B	Ensure team effectiveness
RIIGOV401B	Apply, monitor and report on compliance systems

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RII60109 Advanced Diploma of Metalliferous Mining

Modification History

Not applicable.

Description

The Advanced Diploma of Metalliferous Mining reflects the role of open cut or underground metalliferous mine managers who perform tasks that are broad, specialised, complex and technical and include strategic areas and initiating activities. They are required to demonstrate self-directed application of theoretical and technical knowledge and initiate solutions to technical problems or management requirements.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

The qualification has core and elective units of competency requirements that cover the general and specialist skills for two (2) streams.

Stream 1 – Open Cut Metalliferous Mining

Stream 2 – Underground Metalliferous Mining

The core units and requirements of one (1) stream must be met for award of this qualification.

The following units of competency are required:

Stream 1 – Open Cut Metalliferous Mining

Successful completion of fourteen (14) units of competency made up of:

Core Units

- eight (8) Core units of competency, plus two Group A Technical Management units as listed
- four (4) elective units of which all four (4) units are drawn from the Group C elective units listed, OR
- at least two (2) units are drawn from the Group C elective units listed, and
- up to two (2) units from elsewhere in this or any other Training Package

Stream 2 – Underground Metalliferous Mining

Successful completion of fourteen (14) units of competency made up of:

Core Units

- eight (8) Core units of competency, plus three (3) Group B Technical Management units as listed
- three (3) elective units of which all three (3) units are drawn from the Group C elective units listed, OR
- at least two (2) units are drawn from the Group C elective units listed, and
- up to one (1) unit from elsewhere in this or any other Training Package

Units of competency chosen must be relevant to the competency requirements for the job function. Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Note*: A maximum of two (2) units of competency for Open Cut Mining; and a maximum of one (1) unit of competency for Underground Mining, relevant to the job function, may be drawn from elsewhere in this Training Package, or any other endorsed Training Package.*

Core units	
Unit code	*Unit title*
RIIBLA602A	Establish and maintain a blasting system
RIIENV601A	Establish and maintain the environmental management system
RIIERR601A	Establish and maintain mine emergency preparedness and response systems

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RIIGOV601A	Establish, maintain and develop a statutory compliance management system
RIIOHS601A	Establish and maintain the occupational health and safety management system
RIIRAI601A	Establish and maintain the site infrastructure and fixed plant systems
RIIRIS601A	Establish and maintain the risk management system
RIIUND602A	Establish and maintain mine services systems
Group A - Open Cut Mining **Technical Management**	
Unit code	*Unit title*
RIIMEX602A	Establish and maintain surface mining ground control and slope stability systems
RIIMEX604A	Establish and maintain surface product haulage and transport systems
Group B - Underground Mining **Technical Management**	
Unit code	*Unit title*
RIIMEX603A	Establish and maintain underground mining ground control and stable mining systems
RIIRAI612A	Establish and maintain underground product haulage and transport systems
RIIUND601A	Establish and maintain the ventilation management system
Group C Electives	
Unit code	*Unit title*
BSBINM601A	Manage knowledge and information
BSBMGT605B	Provide leadership across the organisation
BSBMGT608B	Manage innovation and continuous improvement
BSBMGT616A	Develop and implement strategic plans
BSBMGT617A	Develop and implement a business plan
BSBPMG609A	Direct procurement and contracting for a project program

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RIIBEF601A	Conduct business negotiations
RIIBEF602A	Establish and evaluate operational performance management systems
RIIBEF603A	Manage decision making process
RIIBEF605A	Resource site plans and objectives
RIILAT601A	Manage group processes
RIIMEX605A	Establish, implement and maintain operational management plans
RIIRAI606A	Establish and maintain mine closure management systems
RIISAM601A	Establish and maintain plant, equipment and infrastructure maintenance system
RIISRM601A	Establish and maintain the stockpile management system
RIIWBP601A	Establish and maintain waste and by-product management system
RIIWMG601A	Establish and maintain water management system

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RII60209 Advanced Diploma of Extractive Industries Management

Modification History

Not applicable.

Description

The Advanced Diploma of Extractive Industries Management reflects the role of personnel working in a quarry or other extractive industries operations who perform tasks that are broad, specialised, complex and technical and include strategic areas and initiating activities. They are responsible for the establishment of the site management systems, plans and policies and are required to demonstrate self-directed application of theoretical and technical knowledge and initiate solutions to technical problems or management requirements.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

- **Requirements for completion of the qualification**
- The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.
- Successful completion of fourteen (14) units of competency made up of:
- at least ten (10) units from the Group A electives list below
- up to of four (4) units, at Diploma or Advanced Diploma level from this or any other Training Package

Units of competency chosen must be relevant to the competency requirements for the job function. Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with

• **Group A Electives**	
• *Unit code*	• *Unit title*
• BSBINM601A	• Manage knowledge and information
• BSBMGT605B	• Provide leadership across the organisation
• BSBMGT608B	• Manage innovation and continuous improvement
• BSBMGT617A	• Develop and implement a business plan
• BSBPMG609A	• Direct procurement and contracting for a project program
• RIIBEF601A	• Conduct business negotiations
• RIIBEF602A	• Establish and evaluate operational performance management systems
• RIIBEF604A	• Conduct feasibility study
• RIIENV601A	• Establish and maintain the environmental management system
• RIIERR504A	• Manage major incidents and emergencies
• RIIGOV601A	• Establish, maintain and develop a statutory compliance management system
• RIIOHS601A	• Establish and maintain the occupational health and safety management system
• RIIQUA601A	• Establish and maintain a quality system
• RIIRAI607A	• Establish quarry operations
• RIIRIS601A	• Establish and maintain the risk management system
• RIIMEX601A	• Plan pit development
• RIIPRO601A	• Design processing plant
• RIIRAI608A	• Establish quarry development
• RIISAM601A	• Establish and maintain plant, equipment and infrastructure maintenance system
• RIISRM601A	• Establish and maintain the stockpile management system
• RIIWBP601A	• Establish and maintain waste and by-product management system
• RIIWMG601A	• Establish and maintain water management system

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RII60312 Advanced Diploma of Underground Coal Mining Management

Modification History

Not applicable.

Description

The Advanced Diploma of Underground Coal Mining Management covers the role of mine managers who perform tasks that are broad, specialised, complex and technical and include strategic areas and initiating activities. They are required to demonstrate self-directed application of theoretical and technical knowledge and initiate solutions to technical problems or management requirements.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of twelve (12) units of competency made up of:

- ten (10) Core units, and
- two (2) Group A elective units

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIERR602A	Establish and maintain underground coal mine emergency preparedness and response systems
RIIMCU601A	Establish and maintain the spontaneous combustion management plan
RIIMCU602A	Establish and maintain the gas management system
RIIMCU605A	Establish and maintain the inrush management plan
RIIMCU606A	Establish and maintain the mining method and strata management systems
RIIRAI603A	Establish and maintain mine transport systems and production equipment
RIIRAI604A	Establish and maintain mine services and infrastructure systems
RIIRIS601A	Establish and maintain the risk management system
RIIUND601A	Establish and maintain the ventilation management system
RIIBLA202B	Support underground shotfiring operations
	OR

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RIIBLA302A	Conduct shotfiring operations in underground coal mines
Group A electives	
Unit code	*Unit title*
BSBFIM501A	Manage budgets and financial plans
BSBINM601A	Manage knowledge and information
BSBMGT605B	Provide leadership across the organisation
BSBMGT608B	Manage innovation and continuous improvement
BSBMGT616A	Develop and implement strategic plans
BSBMGT617A	Develop and implement a business plan
BSBPMG609A	Direct procurement and contracting for a project program
RIIBEF601A	Conduct business negotiations
RIIENV601A	Establish and maintain the environmental management system
RIIGOV601A	Establish, maintain and develop a statutory compliance management system
RIIMCU603A	Establish and maintain the gas drainage management plan
RIIMCU604A	Establish and maintain the outburst management plan
RIIOHS601A	Establish and maintain the occupational health and safety management system
RIIOHS602A	Incorporate health and hygiene factors into mine management
RIIUND603A	Manage, operate and maintain the mine ventilation system

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RII60409 Advanced Diploma of Drilling Management

Modification History

Not applicable.

Description

This qualification reflects the role of managers who perform tasks that are broad, specialised, complex and technical, and include strategic areas and initiating activities. They are required to demonstrate self-directed application of theoretical and technical knowledge and initiate solutions to technical problems or management requirements.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of nine (9) units of competency made up of:

- eight (8) Core units, and
- one (1) elective unit from the list of Group A electives below

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIICCR601A	Manage customer relationships
BSBMGT605B	Provide leadership across the organisation
BSBMGT617A	Develop and implement a business plan
RIIENV601A	Establish and maintain the environmental management system
RIIGOV601A	Establish, maintain and develop a statutory compliance management system
RIIOGD504A	Manage drilling operations
RIIOHS601A	Establish and maintain the occupational health and safety management system
RIIRIS601A	Establish the risk management system
Group A electives	
Unit code	*Unit title*
BSBPMG605A	Direct quality management of a project program
BSBSMB405B	Monitor and manage small business operations
RIIOGD601A	Manage multiple drilling operations
RIIQUA601A	Establish and maintain a quality system

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RII60509 Advanced Diploma of Civil Construction Design

Modification History

Not applicable.

Description

The Advanced Diploma of Civil Construction Design reflects the role of senior civil works designers or para-professional designers who support professional engineers. They perform tasks that are broad, specialised, complex and technical and include strategic areas and initiating activities. They are responsible for the design of complex projects to ensure the implementation of the client's site requirements and are required to demonstrate self-directed application of theoretical and technical knowledge and initiate solutions to technical problems or management requirements.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of twelve (12) units made up of:

- five (5) Core units
- seven (7) elective units made up of:
- at least four (4) units from the Group A General Management units listed
- at least one (1) unit from the Group B Design units listed
- up to two (2) units, from this or any other Training Package or accredited course at any level

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package

The units chosen to satisfy the Advanced Diploma of Civil Construction Design must be additional to the Units of Competency achieved to satisfy the Diploma of Civil Construction Design.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
BSBOHS607B	Advise on application of safe design principles to control OHS risk
BSBPMG608A	Direct risk management of a project program
BSBWOR502B	Ensure team effectiveness
RIICWD601A	Manage the civil works design process
RIIQUA601A	Establish and maintain a quality system
Group A Elective Units – General Management	
Unit code	*Unit title*
BSBMGT608B	Manage innovation and continuous improvement
BSBMGT617A	Develop and implement a business plan
BSBPMG601A	Direct the integration of projects
BSBPMG602A	Direct the scope of a project program

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BSBPMG603A	Direct time management of a project program
BSBPMG604A	Direct cost management of a project program
BSBPMG605A	Direct quality management of a project program
BSBPMG606A	Direct human resource management of a project program
BSBPMG607A	Direct communications management of a project program
BSBPMG609A	Direct procurement and contracting for a project program
BSBSMB405B	Monitor and manage small business operations
RIIBEF601A	Conduct business negotiations
RIIBEF604A	Conduct feasibility study
Group B Elective Units – Design Units	
Unit code	*Unit title*
RIICWD507A	Prepare detailed geotechnical design
RIICWD509A	Prepare detailed design of urban roads
RIICWD510A	Prepare detailed design of busways
RIICWD512A	Prepare detailed design of motorways and interchanges
RIICWD520A	Prepare detailed design of rigid pavements
RIICWD526A	Prepare detailed traffic analysis
RIICWD528A	Prepare detailed design of traffic management systems
RIICWD532A	Prepare detailed design of tunnels
RIICWD533A	Prepare detailed design of civil concrete structures
RIICWD534A	Prepare detailed design of civil steel structures
RIICWD535A	Prepare detailed design of civil timber structures
RIICWD536A	Prepare detailed design of civil masonry, crib and gabion structures

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RII60609 Advanced Diploma of Civil Construction

Modification History

Not applicable.

Description

The Advanced Diploma of Civil Construction reflects the role of managers working in Civil Construction who perform tasks that are broad, specialised, complex and technical and include strategic areas and initiating activities. They are responsible for the establishment of the site management systems, plans and policies and are required to demonstrate self-directed application of theoretical and technical knowledge and initiate solutions to technical problems or management requirements.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of twelve (12) units of competency made up of:

- six (6) Core units
- six (6) elective units to be completed made up of:
- a minimum of three (3) units from the Group A electives list
- a maximum of two (2) units, from this or any other Training Package or accredited course at any level

Units of competency chosen must

- be relevant to the competency requirements for the job function
- reflect the competency profile for the occupation at the enterprise level
- in the case of accredited course units of competency, not duplicate in part or in whole any unit from a Training Package

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units	
Unit code	*Unit title*
BSBMGT605B	Provide leadership across the organisation
RIIENV601A	Establish and maintain the environmental management system
RIIOHS601A	Establish and maintain the occupational health and safety management system
RIIQUA601A	Establish and maintain a quality system
RIIRIS601A	Establish and maintain the risk management system
Core units (select one (1) of the following units to be completed – other unit may be chosen as an elective)	
Unit code	*Unit title*
RIICWM601A	Establish civil constructions plans
RIICWM602A	Establish civil works maintenance programs
Group A Elective units	
Unit code	*Unit title*
BSBMGT608B	Manage innovation and continuous improvement

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BSBMGT617A	Develop and implement a business plan
BSBPMG601A	Direct the integration of projects
BSBPMG602A	Direct the scope of a project program
BSBPMG603A	Direct time management of a project program
BSBPMG604A	Direct cost management of a project program
BSBPMG605A	Direct quality management of a project program
BSBPMG606A	Direct human resource management of a project program
BSBPMG607A	Direct communications management of a project program
BSBPMG608A	Direct risk management of a project program
BSBPMG609A	Direct procurement and contracting for a project program
BSBSMB405B	Monitor and manage small business operations
RIIBEF601A	Conduct business negotiations
RIIBEF602A	Establish and evaluate operational performance management systems
RIIBEF604A	Conduct feasibility study
RIICWD601A	Manage the civil works design process
RIICWM503A	Prepare civil works cost estimate
RIICWM504A	Prepare civil works bill of quantities
RIICWM505A	Prepare civil works schedule of rates
RIIERR504A	Manage major incidents and emergencies
RIIGOV601A	Establish, maintain and develop a statutory compliance management system
RIISAM601A	Establish and maintain plant, equipment and infrastructure maintenance system

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RII60709 Advanced Diploma of Surface Coal Mining Management

Modification History

Not applicable.

Description

The Advanced Diploma of Surface Coal Mining Management covers the role of open cut coal mine managers who perform tasks that are broad, specialised, complex and technical and include strategic areas and initiating activities. They are required to demonstrate self-directed application of theoretical and technical knowledge and initiate solutions to technical problems or management requirements.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

The following table includes a summary of the employability skills as identified by the resources and infrastructure industry for this qualification. The table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes required here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include:**
Communication	• provide clear and direct feedback • listen carefully to instructions and information • read and interpret project plans and safety signs • calculate basic weights, distances and volumes • complete accurate work plans, technical reports, risk assessments, etc • negotiate solutions to customer and workplace based issues • negotiate project details with clients • network with other professionals working in the same field
Teamwork	• plan and lead team performance and operations • coordinate project activities and timelines with clients • work cooperatively with people of different ages, gender, race, religion or political persuasion • provide feedback and advice to staff • lead site-wide planning and coordination activities
Problem-solving	• re-allocate staff and resources in response to changing weather, site conditions and priorities • manage staff to solve problems and coordinate individual responsibilities and activities • work cooperatively with clients to resolve contract and operational issues • manage the ongoing review and adjustment of operations against performance indicators and project milestones
Initiative and enterprise	• act independently to identify potential improvements to working practice and conditions • identify and take steps to resolve risks in the workplace • encourage the exploration and application of innovative approaches to improve on operational performance
Planning and organising	• manage and coordinate time and priorities for self and team • identify and obtain appropriate personnel and resources for work • ensure that risks are assessed and appropriate emergency plans are in place • ensure that project planning incorporates the possibility of adapting to future changes

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Self-management	• take responsibility for ensuring team targets and goals are achieved • understand the standard of work expected at the work site • proactively manage team performance • develop trust and confidence in staff and customers
Learning	• be willing to learn new ways of working • seek information to improve performance from people and workplace documents like policies, procedures etc • understand equipment characteristics, technical capabilities, limitations and procedures • lead change and continuous improvement processes • manage learning and development plans • prepare and lead formal or informal training sessions
Technology	• apply a range of basic IT skills in monitoring and reporting on systems • operate equipment safely and according to manufacturer and workplace guidelines • use communications technology appropriate to the workplace (email, mobile, radio, etc) • computer technology is used to monitor and communicate project status • use IT to create documents and maintain records of work activities

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Packaging Rules

Requirements for completion of the qualification

The following table provides the packaging rules for this qualification, followed by the list of relevant units of competency.

Successful completion of fourteen (14) units of competency made up of:

- six (6) Core units, and
- eight (8) elective units including:
- four (4) from the Group A electives listed below
- four (4) from the Group B electives listed below

Units of competency chosen must be relevant to the competency requirements for the job function.

Care must be taken to ensure that all prerequisites specified within imported units, or units chosen as electives, are complied with.

Core units of competency	
Unit code	*Unit title*
RIIRIS601A	Establish and maintain the risk management system
RIIENV601A	Establish and maintain the environmental management system
RIIGOV601A	Establish, maintain and develop a statutory compliance management system
RIIOHS601A	Establish and maintain the occupational health and safety management system
RIIQUA601A	Establish and maintain a quality system
RIIERR601A	Establish and maintain mine emergency preparedness and response systems
Group A electives	
Unit code	*Unit title*
RIIMEX601A	Plan pit development
RIIWMG601A	Establish and maintain water management system
RIISRM601A	Establish and maintain the stockpile management system
RIIWBP601A	Establish and maintain waste and by-product management system
RIISAM601A	Establish and maintain plant, equipment and infrastructure maintenance system
RIIUND602A	Establish and maintain mine services systems
RIIMEX602A	Establish and maintain surface mining ground control and slope stability systems

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RIIRAI601A	Establish and maintain the site infrastructure and fixed plant systems
Group B electives	
Unit code	*Unit title*
RIIERR504A	Manage major incidents and emergencies
BSBPMG609A	Direct procurement and contracting for a project program
RIIBEF601A	Conduct business negotiations
BSBMGT616A	Develop and implement strategic plans
BSBMGT617A	Develop and implement a business plan
BSBMGT605B	Provide leadership across the organisation
BSBINM601A	Manage knowledge and information
BSBMGT608B	Manage innovation and continuous improvement
BSBFIM501A	Manage budgets and financial plans

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RIISS00001 Skill Set Explosion Protected Diesel Engine Systems Maintenance

Modification History

Not applicable.

Description

Not applicable.

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Pathways Information

These units provide a career development opportunity for experienced persons or tradespersons carrying out maintenance on explosion protected diesel engine systems used in underground coal mines.

Licensing/Regulatory Information

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements

Skill Set Requirements

RIIDES301	Inspect, test and maintain diesel engine systems and their ancillary systems
RIIDES302	Inspect, test and maintain joints on diesel engine systems
RIIDES303	Inspect, test and maintain cooling systems on diesel engine systems
RIIDES304	Inspect, test and maintain inlet systems on diesel engine systems
RIIDES305	Inspect, test and maintain exhaust systems on diesel engine systems
RIIDES306	Inspect, test and maintain safety shutdown systems on diesel engine systems
RIIDES307	Test, determine the cause and rectify excessive emission levels on diesel engine systems

Target Group

This Skill Set is for those conducting maintenance on explosion protected diesel engine systems for vehicles used in underground coal mines. This skill set is suitable for persons with a metal, mechanical, electrical or automotive trade or mechanical or electrical engineering qualification.

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those carrying out maintenance on explosion protected diesel engine systems used in underground coal mines

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Custom Content Section

Not applicable.

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RIISS00002 Skill Set Leading Hand

Modification History

Not applicable.

Description

This Skill Set is for those individuals working as a leading hand in the resources and infrastructure industries.

Pathways Information

These units provide credit toward a number of Certificate IV qualifications in this Training Package and towards other qualifications in management.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

BSBSUS301A	Implement and monitor environmentally sustainable work practices
BSBWOR404B	Develop work priorities
BSBWOR502A	Ensure team effectiveness
RIIGOV401B	Apply, monitor and report on compliance systems
RIIRIS301B	Apply risk management processes
And EITHER the following BSB unit (all sectors except Coal)	
BSBOHS407A	Monitor a safe workplace
OR for the Coal Sector both of the following units	
RIIOHS403A	Apply the mine occupational health and safety management plan
RIIOHS404A	Implement and monitor health and hygiene management systems

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Target Group

This Skill Set is for those individuals working as a leading hand in the resources and infrastructure industries.

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those aiming to work as a leading hand.

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RIISS00003 Skill Set Mine Surveying

Modification History

Not applicable.

Description

This skill set is for those working in mine surveying. It is essential that the individual already holds either a Diploma of Surveying qualification or a higher level surveying qualification. The skill set is designed to provide the mining specific competencies that a surveyor would need to work in a mining context.

Pathways Information

These units provide credit towards the Diploma of Surface Operations Management or the Diploma of Underground Coal Mining Management.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

RIISDM501A	Conduct mine surveying operations
RIIRIS402A	Carry out risk management processes
RIICOM301B	Communicate information
RIIOHS201A	Work safely and follow OHS policies and procedures

Target Group

This skill set is for those working in mine surveying. It is essential that the individual already holds either a Diploma of Surveying qualification or a higher level surveying qualification. The skill set is designed to provide the mining specific competencies that a surveyor would need to work in a mining context.

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Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those working in mine surveying.

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RIISS00004 Skill Set Rouseabout Off Shore Oil and Gas

Modification History

Not applicable.

Description

This skill set is for those beginning work as an off shore oil and gas rouseabout.

Pathways Information

These units provide credit towards a number of qualifications from the RII09 Training Package, particularly the Certificate II in Drilling (Off Shore Oil and Gas).

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

BSBWOR203A	Work effectively with others
RIIOGD201A	Assist in maintaining rig safety and emergency procedures
RIIOGD202A	Carry out equipment and basic rig maintenance
RIIOGF201A	Carry out deck operations
RIIOHS201A	Work safely and follow OHS policies and procedures

Target Group

This skill set is for those beginning work as an off shore oil and gas rouseabout.

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for induction to off shore oil and gas work.

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RIISS00005 Skill Set Site Health and Safety Coordinator

Modification History

Not applicable.

Description

This skill set is for those entering the mining industry as a safety coordinator with experience in coordinating safety requirements but requiring skills in operating in a mining environment.

Pathways Information

These units provide credit towards a number of qualifications from the RII09 Training Package, including the Certificate IV Surface Extraction Operations.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

BSBOHS402B	Contribute to the implementation of the OHS consultation process
BSBOHS407A	Monitor a safe workplace
RIIOHS301A	Conduct safety and health investigation
RIIOHS403A	Apply the mine occupational health and safety management plan
RIIOHS404A	Implement and monitor health and hygiene management systems
RIIRIS402A	Carry out risk management processes

Target Group

This skill set is for those entering the mining industry as a safety coordinator with experience in coordinating safety requirements but requiring skills in operating in a mining environment.

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Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those who work as a site health and safety coordinator in a mining context.

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RIISS00006 Skill Set Supervision of Indigenous Employees

Modification History

Not applicable.

Description

This Skill Set is designed for experienced supervisors or managers who are seeking to broaden their skills for the purpose of leading a work team which includes Indigenous Australians or supervisors who are already working with Indigenous employees and require recognition of their current skills.

Pathways Information

These units of competency provide credit towards a range of supervisory qualifications in this or any other endorsed Training Package, including: BSB40807 Certificate IV in Frontline Management; TAE40110 Certificate IV in Training and Assessment.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

RIILAT401A	Provide leadership in the supervision of Indigenous employees
TAEDEL301A	Provide work skill instruction

Target Group

This Skill Set is designed for experienced supervisors or managers who are seeking to broaden their skills for the purpose of leading a work team which includes Indigenous Australians or supervisors who are already working with Indigenous employees and require recognition of their current skills.

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Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those leading a work team which include Indigenous Australians.

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RIISS00007 Skill Set Surface Coal Mine Safety

Modification History

Not applicable.

Description

Not applicable.

Pathways Information

These units provide credit toward a number of Certificate II and III qualifications in this Training Package.

Licensing/Regulatory Information

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements
This skill set addresses the regulatory requirements for open-cut coal mining specified in Recognised Standard 11, Training in coal mines - Coal Mining Safety and Health Act 1999, QLD.

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Skill Set Requirements

RIIOHS201A	Work safely and follow OHS policies and procedures
RIIERR205A	Apply initial first aid
RIIGOV201A	Comply with site work processes/procedures
RIIRIS201B	Conduct local risk control
RIICOM201A	Communicate in the workplace
RIIERR302A	Respond to local emergencies and incidents

Target Group

This Skill Set is for those individuals working in surface coal mining operations in the resources and infrastructure industries.

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the QLD regulatory requirements for those aiming to work as in open-cut coal mining operations.

Custom Content Section

Not applicable.

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RIISS00009 Skill Set Underground Coal Mine Safety

Modification History

Not applicable.

Description

Not applicable.

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Pathways Information

These units provide credit toward a number of Certificate II and III qualifications in this Training Package.

Licensing/Regulatory Information

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements

Skill Set Requirements

RIIOHS201A	Work safely and follow OHS policies and procedures
RIIERR205A	Apply initial first aid
RIIGOV201A	Comply with site work processes/procedures
RIIRIS201B	Conduct local risk control
RIICOM201A	Communicate in the workplace
RIIERR203B	Escape from a hazardous situation unaided

Target Group

This Skill Set is for those individuals working in underground coal mines in the resources and infrastructure industries.
This skill set addresses the regulatory requirements for underground coal mining specified in Recognised Standard 11, Training in coal mines - Coal Mining Safety and Health Act 1999, QLD

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the QLD regulatory requirements for those aiming to work in underground coal mines.

Custom Content Section

Not applicable.

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RIISS00008 Skill Set Surface Shotfiring

Modification History

Not applicable.

Description

This skill set is for those beginning work as a surface shotfirer.

Pathways Information

These units provide credit towards a number of qualifications from the RII09 Training Package, particularly the Certificate II in Surface Extraction Operations.

Licensing/Regulatory Information

Shotfiring regulations vary between states/territories. To be appointed under any statutory requirements as a shotfirer, state/territory licensing requirements must be met.

State/territory licensing requirements need to be confirmed by the employer, the participant and the Registered Training Organisation delivering and/or assessing the units of competency, before training commences.

Skill Set Requirements

RIIBLA201A	Support shotfiring operations
RIIBLA205A	Store, handle and transport explosives
RIIBLA301A	Conduct surface shotfiring operations

Target Group

This skill set is for those beginning work as a surface shotfirer.

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those beginning work as a surface shotfirer.

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RIISS00010 Skill Set Underground Shotfiring - Coal

Modification History

Not applicable.

Description

This skill set is for those beginning work as an underground shotfirer in a coal mining context.

Pathways Information

These units provide credit towards a number of qualifications from the RII09 Training Package, particularly the Certificate III in Underground Coal Mining.

Licensing/Regulatory Information

Shotfiring regulations vary between states/territories. To be appointed under any statutory requirements as a shotfirer, state/territory licensing requirements must be met.

State/territory licensing requirements need to be confirmed by the employer, the participant and the Registered Training Organisation delivering and/or assessing the units of competency, before training commences.

Skill Set Requirements

RIIBLA202B	Support underground shotfiring operations
RIIBLA302A	Conduct shotfiring operations in underground coal mines

Target Group

This skill set is for those beginning work as an underground shotfirer in a coal mining context.

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those beginning work as an underground shotfirer.

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RIISS00011 Skill Set Underground Shotfiring - Metalliferous

Modification History

Not applicable.

Description

This skill set is for those beginning work as an underground shotfirer in a metalliferous mining context.

Pathways Information

These units provide credit towards a number of qualifications from the RII09 Training Package, particularly the Certificate III in Underground Metalliferous Mining.

Licensing/Regulatory Information

Shotfiring regulations vary between states/territories. To be appointed under any statutory requirements as a shotfirer, state/territory licensing requirements must be met.
State/territory licensing requirements need to be confirmed by the employer, the participant and the Registered Training Organisation delivering and/or assessing the units of competency, before training commences.

Skill Set Requirements

RIIBLA205A	Store, handle and transport explosives
RIIBLA303A	Conduct underground development shotfiring
RIIBLA304A	Conduct underground production shotfiring
RIIBLA305A	Conduct secondary blasting

Target Group

This skill set is for those beginning work as an underground shotfirer in a metalliferous mining context.

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Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those beginning work as an underground metalliferous shotfirer.

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RIISS00013 Skill Set Work Zone Traffic Control - Implement Traffic Control Guidance Plan

Modification History

Not applicable.

Description

Not applicable.

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Pathways Information

These units may provide credit toward a number of Certificate II or III qualifications in this Training Package.
Note: The unit of competency must be assessed in the context of the work zone traffic control environment.

Licensing/Regulatory Information

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements

Skill Set Requirements

RIIOHS201A	Work safely and follow OHS policies and work procedures
RIICOM201A	Communicate in the workplace
RIIOHS302A	Implement traffic management plan

Target Group

This Skill Set is for those individuals working as a work zone traffic control guidance plan implementer in the resources and infrastructure industries.

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those aiming to work as a traffic control guidance plan implementer.

Custom Content Section

Not applicable.

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RIISS00017 Skill Set Work Zone Traffic Control Guidance Plan - Developer

Modification History

Not applicable.

Description

Not applicable.

Pathways Information

These units may provide credit toward a number of Certificate II, III, IV and Diploma qualifications in this Training Package and towards other qualifications in management.
Note: The unit of competency must be assessed in the context of the work zone traffic control environmen

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Licensing/Regulatory Information

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements

Skill Set Requirements

RIIOHS201A	Work safely and follow OHS policies and work procedures
RIIRIS301B	Apply risk management processes
RIIGOV401B	Apply monitor and report on compliance systems
RIICWD503A	Prepare work zone traffic management plan

Target Group

This Skill Set is for those individuals working as a work zone traffic control guidance plan developer in the resources and infrastructure industries. This may include selection, modification and design of the traffic control guidance scheme.

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those aiming to work as a traffic control guidance plan developer.

Custom Content Section

Not applicable.

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RIISS00012 Skill Set Work Zone Traffic Control - Auditor/Inspector

Modification History

Not applicable.

Description

Not applicable.

Pathways Information

These units may provide credit toward a number of Certificate II, III, IV and Diploma qualifications in this Training Package and towards other qualifications in management.
Note: The unit of competency must be assessed in the context of the work zone traffic control environment.

Licensing/Regulatory Information

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements

Skill Set Requirements

RIIOHS201A	Work safely and follow OHS policies and work procedures
RIIRIS301B	Apply risk management processes
RIIGOV401B	Apply monitor and report on compliance systems
RIICWD503A	Prepare work zone traffic management plan

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Target Group

This Skill Set is for those individuals working as an auditor and / or inspector of a traffic control guidance plan.

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those aiming to work as a traffic control guidance plan inspector/auditor

Custom Content Section

Not applicable.

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RIISS00014 Skill Set Work Zone Traffic Control - Road Labourer

Modification History

Not applicable.

Description

Not applicable.

Pathways Information

These units provide credit toward a number of Certificate II qualifications in this Training Package.
Note: The unit of competency must be assessed in the context of the work zone traffic control environment.

Licensing/Regulatory Information

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements

Skill Set Requirements

RIIOHS201A	Work safely and follow OHS policies and work procedures.
RIICOM201A	Communicate in the workplace.

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Target Group

This Skill Set is for those individuals working as a labourer in a work zone traffic control environment in the resources and infrastructure industries

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those aiming to work as a road labourer in a work zone traffic management environment.

Custom Content Section

Not applicable.

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RIISS00016 Skill Set Work Zone Traffic Control - Traffic Controller

Modification History

Not applicable.

Description

Not applicable.

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Pathways Information

These units provide credit toward a number of Certificate II or III qualifications in this Training Package.

Licensing/Regulatory Information

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements

Skill Set Requirements

RIIOHS201A	Work safely and follow OHS policies and work procedures
RIIOHS205A	Control traffic with a stop/slow bat
RIICOM201A	Communicate in the workplace

Target Group

This Skill Set is for those individuals working as a work zone traffic controller in the resources and infrastructure industries.

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those aiming to work as a work zone traffic controller.

Custom Content Section

Not applicable.

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RIISS00015 Skill Set Work Zone Traffic Control - Supervisor

Modification History

Not applicable.

Description

Not applicable.

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Pathways Information

These units provide credit toward a number of Certificate IV qualifications in this Training Package.
Note: The unit of competency must be assessed in the context of the work zone traffic control environment.

Licensing/Regulatory Information

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements

Skill Set Requirements

RIIOHS201A	Work safely and follow OHS policies and work procedures
RIIRIS301B	Apply risk management processes
RIIGOV401B	Apply monitor and report on compliance systems
RIIOHS302A	Implement traffic management plan
RIIBEF402A	Supervise on-site operations

Target Group

This Skill Set is for those individuals working as a work zone traffic control supervisor in the resources and infrastructure industries.

Suggested words for Statement of Attainment

This Skill Set from the RII09 Resources and Infrastructure Industry Training Package meets the industry requirements for those aiming to work as a work zone traffic control supervisor.

Custom Content Section

Not applicable.

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RIIBEF201B Plan and organise work

Modification History

Not applicable.

Unit Descriptor

This unit covers the planning and organisation of work in the resources and infrastructure industries. It includes planning and preparing for work, sequencing work safely, and resolving problems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and clarify employment conditions, responsibilities and obligations 1.3. Obtain, confirm and apply ***work instructions*** 1.4. Plan work from an analysis of the required outcomes, standard work procedures, available time, resource requirements and known priorities 1.5. ***Inspect and prepare work areas*** in ***coordination with others*** 1.6. Select appropriate ***tools***, ***plant and equipment*** for the task, check for serviceability and rectify and report any faults 1.7. Identify and safely handle materials appropriate to the work application 1.8. Identify and apply environmental protection requirements from the project environmental management plan or appropriate regulatory specification
2. Sequence work safely	2.1. Determine work plan to ensure tasks are performed in a logical, safe and efficient sequence 2.2. Complete ***work documentation and/or reports*** to meet enterprise requirements
3. Resolve problems	3.1. Identify problems with work processes and make suggestions for improvement 3.2. Modify work processes to suit changing circumstances, after consultation with supervisor or other relevant personnel
4. Clean up	4.1. Clear work area and correctly dispose of recyclable materials 4.2. Clean, check and maintain machinery, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to plan and organise work:

- apply legislative, organisation and site requirements and procedures for planning and organising work
- access, interpret and apply technical and operational information including work instructions, quality assurance procedures, manufacturer's instructions, materials safety data sheet and equipment instructions
- solve problems particularly in teams and in dealing practically with blockages to work flow and systematically work around these to avoid or minimise reworking and avoid wastage
- show initiative in adapting to changing work conditions or contexts particularly when working across a variety of work placements
- use mathematical ideas and techniques to correctly calculate time to complete tasks, calculate material requirements and establish quality checks

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to plan and organise work:

- basic work planning processes
- operational safety requirements, such as equipment characteristics, technical capabilities and limitations, operational procedures, materials data safety sheet (MSDS)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for planning and organising work • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of work plan • working with others to undertake and complete the planning and organisation of work that meets all of the required outcomes • consistent timely completion of a work plan that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the planning and organisation of work

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may include:	• plans, specifications, quality requirements and operational details relevant to the tasks • documentation or verbal instructions

Inspect and prepare the work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection
	• determination of appropriate path of movement for loads and equipment/vehicles
	• floor, pad, roads, ramps and bench clean up to specified levels and grade requirements

Coordination with others may include:	• yard persons • laboratory personnel • mobile plant operators • processing plant operators • haulage unit operators • maintenance personnel
Tools, **plant and equipment** may include:	• those commonly used in relevant work environments
Work documentation and/or reports may include:	• shift reports • handover briefs • time cards • other relevant records

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Unit Sector(s)

Business Effectiveness

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBEF202A Identify and rectify site operating problems

Modification History

Not applicable.

Unit Descriptor

This unit covers the identification and rectification of site operating problems in the resources and infrastructure industries. It includes identifying operational processes, plant and equipment, and monitoring and maintaining plant performance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify operational processes, plant and equipment	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify the ***links and effects*** on associated ***worksite processes***, outputs, plant and equipment 1.3. Identify the operating characteristics and limitations of worksite processes and associated plant and equipment 1.4. Identify the process flow and interaction between processes and ***plant and equipment*** 1.5. Locate process routes and associated plant and equipment 1.6. Identify process control systems or centres and their function and location in the worksite 1.7. Identify ***health and safety requirements and controls*** 1.8. Identify environmental requirements for site processes and plant and equipment
2. Monitor plant performance	2.1. Obtain and interpret the worksite process plant monitoring program and schedule 2.2. Confirm monitoring program and schedule with ***other worksite personnel*** 2.3. Interpret ***indicators***, ***operations***/***shift reports and records*** and verbal information to identify faults/malfunctions in process or plant 2.4. Visually and aurally inspect plant and equipment to identify operating problems/malfunctions 2.5. Monitor effectiveness of health and safety controls 2.6. Monitor effectiveness of ***environmental controls*** for site processes, plant and equipment
3. Maintain plant performance	3.1. Make minor adjustments to controls, plant and equipment to maintain efficient operations 3.2. Rectify, or refer process, plant and equipment faults/malfunctions to relevant

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	personnel for action 3.3. Identify major process, plant or equipment malfunctions and implement emergency shutdown procedures 3.4. Maintain effectiveness of health and safety controls 3.5. Maintain effectiveness of environmental controls for site processes, plant and equipment 3.6. Report problems/malfunctions and actions taken

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to identify and rectify site operating problems:

- apply legislative, organisation and site requirements and procedures for identification and rectification of site operating problems
- access, interpret and apply technical and safety information
- operate plant and machinery
- communicate and coordinate activities with others
- maintain plant and equipment records
- apply diagnostic/fault finding techniques
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to identify and rectify site operating problems:

- operational safety procedures
- operator responsibilities
- plant layouts
- operational procedures related to processes, plant and equipment carried out by the operator
- site communication procedures and systems
- process, plant and equipment type purpose, application, characteristics and limitations
- process, plant and equipment monitoring systems, programs and interpretation
- plant and equipment maintenance systems and procedures
- emergency shutdown procedures
- environmental requirements and controls related to processes, plant and equipment
- health and safety requirements and controls related to processes, plant and equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and includes evidence of the following: • knowledge of the requirements, procedures and instructions for identifying and rectifying site operating problems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the identification and rectification of site operating problems • working with others to undertake and complete the identification and rectification of site operating problems that meet all of the required outcomes • consistent timely completion of identification and rectification of site operating problems that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the identification and rectification of site operating problems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • safety information • management plans • OHS policy • code of practice • safe working procedures (or equivalent) • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Links and effects may include:	• proficiency • efficiency • productivity • impacts • quality
Worksite processes may include:	• materials extrication • loading and hauling • blasting and ground control • drilling • dredging • road construction • stockpiling • ancillary plant/equipment operation • rehabilitation
Plant and equipment may include:	• fluid power systems • internal combustion plant and systems • product preparation • open-cut/underground mining processes • cranes, mobile and fixed • sizing systems, screens, breakers, crushers etc • pumping and dewatering systems

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	• bins and storage • mobile and transportable equipment • workshops and associated equipment • structures • product processing plants • dozers • conveyors • reclaim tunnels • service vehicles • large dump trucks • hydraulic excavators/shovels • rope shovels • draglines • large rotary blast hole drills • graders, loaders and water trucks • scrapers • lighting plants • continuous miners • road headers • shuttle or ram cars • fans • bolting rigs • underground transport systems • winders • longwall/breaker line supports • lubrication systems • mine reticulation systems

Health and safety requirements and controls may include those concerned with:	• sanitation and hygiene, including:
	• potable water
	• cleanliness and sanitation
	• vermin control and eradication
	• chemical and hazardous materials, including:
	  • industrial chemicals
	  • diesel, oils, hydraulic oils
	  • asbestos
	  • explosives
	• dust control methods, including:
	  • monitoring and analysis of dust
	  • filters, isolation, personal protective equipment
	• mine transport networks and rules, including:

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	• route • traffic rules • signage and barriers • personal equipment to protect: • hearing • eyes (industrial, radiation, ultra-violet, infra-red radiation, dust) • respiration • hands, head, hair, feet • safety belts and harnesses • safety signs • stress and stressors • drugs, including: • alcohol, nicotine • prescription drugs • illicit drugs and substances • impact of drugs on fitness for work • vibration hazards resulting from: • hand operated equipment • drilling equipment • corrugated roads • springs and seating etc • noise management controls • heat/cold exposure protection
Other worksite personnel may include:	• supervisors • tradespersons • technicians • contractors • transport • plant attendants • OHS personnel • plant/equipment operators
Indicators may include:	• flow • current • density • levels • restrictions • air flows • pressure • speed

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	• temperature • unusual noises • vibrations • power • temperature • corrosion
Operations/shift reports and records may include:	• shift operation reports • maintenance reports and records • operational log books • handover information • instrument records • test results • inspections • quality reports and records
Environmental requirements may include those relating to:	• culturally-sensitive sites and artefacts • drainage • dust and fumes • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality • hazardous chemicals • waste management and disposal
Environmental controls may include those concerned with:	• liquid waste • solid waste • hazardous materials • excessive energy and water use • air emissions and contaminants • excessive noise • excessive waste • excessive water consumption • excessive energy consumption

Unit Sector(s)

Business Effectiveness

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBEF301A Run on-site operations

Modification History

Not applicable.

Unit Descriptor

This unit covers running on-site operations in the resources and infrastructure industries. It includes ensuring the occupational health and safety requirements are adhered to, communicating with key people, diagnosing and solving routine problems, monitoring the work program, coordinating work of the team and maintaining operating records. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure the occupational health and safety requirements are adhered to by all on site	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Relay ***safety rules and regulations***, ***legislation*** and specific site instructions to crew, and monitor compliance 1.3. Conduct camp, site and equipment safety audits as required 1.4. Identify hazards on worksite 1.5. Determine a range of preventative measures for potential ***work hazards*** on site (e.g. Job Safety Analysis) 1.6. Communicate procedures for the use of personal protective clothing and installed safety equipment clearly to the crew 1.7. Provide clear instructions to all crew in emergency drills and their application 1.8. Establish methods for contacting all necessary medical services 1.9. Provide safety rig induction training as required to new personnel and visitors to the worksite (including supervising geologists/engineers) 1.10. Complete accurate occupational health and safety records for the work area
2. Communicate regularly with client, crew, and other relevant parties	2.1. Brief crew and other relevant parties regularly of up to date scope of activities 2.2. Maintain a good working relationship with landholder/client 2.3. Honour confidentiality clauses in contract 2.4. Communicate regular progress and ***problems*** encountered/anticipated to client/drill supervisor, as required 2.5. Maintain regular communication by radio/telephone to report progress and/or request information or assistance 2.6. Follow standard work procedures and communicate these requirements to crew members
3. Diagnose and solve routine problems	3.1. Confirm the existence and immediate effects/potential effects of the problem by

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	investigation 3.2. Identify a clear and accurate definition of the problem 3.3. Identify the preferred option after an analysis of available information 3.4. Gain approval to proceed with the preferred option from the appropriate party, if necessary 3.5. Seek additional equipment and/or help/advice if problem is too complex
4. Monitor work program	4.1. Monitor work progress regularly and note deviation from program 4.2. Check availability of consumable items and equipment is consistent with work schedules, the requirements of the task and delivery times for replacement items 4.3. Implement alternative plans if required 4.4. Allocate specific tasks to make effective use of crew 4.5. Report issues beyond scope of authority and then carry out directed actions 4.6. Maintain cost effective operations by minimising damage to equipment and excessive use of consumable items
5. Coordinate work of the team	5.1. Make all members of the team aware of their roles and responsibilities in the work plan 5.2. Set and check at regular intervals operational targets consultation with the crew 5.3. Provide assistance when requested, to meet operational targets 5.4. Acquire resources required to support changing work requirements 5.5. Allot work loads and required resources in accordance with modified work plans 5.6. Communicate to them agreed time lines for tasks
6. Maintain operating records	6.1. Determine range of ***operating records*** and ***reports*** and required frequency 6.2. Keep daily running records to facilitate the completion of necessary documentation 6.3. Complete logs, records and shift reports

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	with numbers, quantities, dates and succinct descriptions 6.4. Note variations to contract requirements on log and discuss with originator and management if possible 6.5. Complete required written reports and submit 6.6. Take accurate measurements of length of drill string components and record

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to run on-site operations:

- apply legislative, organisation and site requirements and procedures for running on-site operations
- reading and writing
- communication to train and instruct, receive and pass on information
- diagnostic assessment
- hazard identification and risk assessment
- record keeping and logging

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to run on-site operations:

- operational and maintenance procedures
- environmental aspects
- fault finding and troubleshooting techniques
- team work
- time management
- communication systems, processes and procedures (e.g. 2-way radio)
- graphical representation (e.g. maps, diagrams, and their uses for interpretation and prediction)
- required documentation (e.g. requisition forms, daily log reports)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for running on-site operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of on-site operations • working with others to undertake and complete the running of on-site operations that meets all of the required outcomes • consistent timely completion of on-site operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete on-site operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • company's standard operating procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety rules, **regulations and legislation** may include:	• tag out procedures • observance of safety signs • drugs and alcohol • use of personal protective equipment • personal hygiene and sanitation • environmental • heritage • anti-discrimination
Work hazards may include:	• accidents • working in the dark/at night • fatigue • drug or alcohol abuse • fire • emergencies such as chemical spills • confined spaces, hot work areas • environmental factors, heat/cold, flood, storm, lightning, contaminated sites, sunburn • flammable gases/liquids, explosives • noise, dust, slips, trips and falls • plant hazards such as rotating hazards and circulation hazards • in-hole fluids, gases and contaminants • hazards associated with aircraft, over water drilling, winching, crane use and forklifts
Problems may include:	• safety issues • environmental factors

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	• transport difficulties • equipment failure • formation problems • loss of sample/sampling difficulties • lost circulation • pressure formations • differential pressure sticking • hole deviation • loss of sample integrity • encountering unexpected contaminants, or contaminants in higher than expected concentrations • old mine workings • fishing • loss of penetration • sudden loss of pump pressure • teams varying in size, and composition depending on their purpose, functions and geographic locations
Operating records may include:	• daily drill operations reports • petty cash records • records of other purchases, i.e. accounts/credit cards • time sheets • plant and vehicle logs • maintenance records • visitor induction records
Reports may include:	• drill operations reports • bore logs • bore completion reports • site inspection reports • plant inspection reports • injury and accident reports • site sketches and bore location reports • monitoring bore construction details • incident reports

Unit Sector(s)

Business Effectiveness

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBEF302A Monitor site production activities

Modification History

Not applicable.

Unit Descriptor

This unit covers the monitoring of site production activities in the resources and infrastructure industries. It includes planning and preparing for operation, allocating and logging resources, monitoring and reporting plant/machinery activity, and monitoring movement of materials. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify ***shift changeover details*** 1.4. Establish and maintain communications with other ***personnel*** using approved communication methods 1.5. ***Coordinate*** shift activities with other personnel 1.6. Identify, address and report ***potential risks and hazards*** 1.7. Complete computer systems and equipment pre-start checks 1.8. Identify, address and report site ***environmental issues*** 1.9. Check previous shift details and record outstanding maintenance inspections and identified defects
2. Allocate and log resources	2.1. Allocate and log ***hauling equipment*** to loading equipment and log 2.2. Interpret data and re-allocate equipment to maintain productiveness and to meet changing site conditions 2.3. Access ***employee and contractor details*** and allocate personnel to specific types of plant/equipment to ensure maximum productiveness 2.4. Maintain records of individual employees' productiveness on each type of machine in operation
3. Monitor and report plant/machine activity	3.1. Monitor and report the current status of site operation and plant 3.2. Continuously monitor data to identify the ***location*** of equipment on site 3.3. Determine from data the location of where ***material*** is being moved, haul distances, and the location for dumping of materials 3.4. Interpret data to determine and generate reports on equipment usage, availability

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	and productivity 3.5. Capture ***data for measuring operational outputs*** and resource usage, so as to report total usage and resource consumption rates
4. Monitor movement of materials	4.1. Log the movement of ***loading and hauling machinery*** and the quantities of materials moved 4.2. Monitor and report stock levels for availability of dispatched materials 4.3. Monitor and report productivity rates and cycle times

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to monitor site production activities:

- apply legislative, organisation and site requirements and procedures for monitoring site production activities
- operate computers
- communicate effectively with site personnel
- apply diagnostic techniques
- work in a team
- be a self-starter
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to monitor site production activities:

- computerised monitoring and control systems
- monitoring, recording and generating reports
- allocating and re-allocating site equipment and personnel
- consolidating end-of-shift reports
- shift production priorities
- control and access to site
- responses in the event of a site emergency
- site and equipment safety requirements and procedures
- stockpile management processes
- plant machinery characteristics, technical capabilities and limitations
- environmental requirements and constraints related to site operations
- recording and reporting processes

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for monitoring site production activities • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of monitoring of site production activities • working with others to undertake and complete the site production activities that meets all of the required outcomes • consistent timely completion of monitoring site production activities that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical applications using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the monitoring of site production activities

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements and procedures
	• manufacturer's guidelines and specifications
	• Australian standards
	• Acts and regulations dealing with:
	  • worksite safety and health
	  • worksite inspection
	  • OHS
	  • Explosives
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Shift changeover details may include:	• nature and scope of the work • working conditions • achievement targets • site lighting arrangements • defects on equipment • hazards and potential hazards • coordination requirements/issues
Personnel may include:	• contractors • drillers • drivers • holders of appropriate tickets • licensed operators • maintenance staff/tradespersons • personnel authorised by site management • service personnel • supervisors • surveyors
Coordination activities may include:	• communication with personnel • awareness of other support plant • equipment
Potential risks and hazards may	• abandoned equipment

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include:	• adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground • unstable faces • vehicles
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
Hauling and loading equipment may include:	• loader • excavator • truck • dump truck • rail vehicles and wagons
Employee and contractor details may include:	• qualifications • permits • site authorities • license to operate equipment • time-sheet details • training details • leave
Locations may include:	• where material is being mined • where equipment is at the start and end of shift • haul distances

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Material may include:	• production material • topsoil • gravel • ore • overburden
Data for measuring operational outputs may include:	• fuel • drill holes and metres drilled • consumables • advance • rail activities • equipment hour metre readings

Unit Sector(s)

Business Effectiveness

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBEF401A Manage non-routine, complex technical situations

Modification History

Not applicable.

Unit Descriptor

This unit covers the management of non-routine, complex technical situations in the resources and infrastructure industries. It includes collecting and analysing information, diagnosing and solving complex problems, managing non-routine, complex technical operations and using technology effectively. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Collect and analyse information	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Anticipate ***problems*** by constantly monitoring and analysing all available information 1.3. Identify operational problems promptly and consider from an operational and client perspective 1.4. Assess information for relevance and applicability 1.5. Access other sources of ***information*** to assist in problem solving
2. Diagnose and solve complex problems	2.1. Diagnose actual problem using all available information 2.2. Determine a range of possible solutions from extensive knowledge and experience 2.3. Communicate diagnostic parameters to senior management 2.4. Analyse problems for any long term impact and assess potential solutions 2.5. Decide most appropriate action 2.6. Carry out calculations necessary to implement action 2.7. Implement action to resolve the immediate problem 2.8. Monitor effectiveness of action 2.9. Feed results of action taken through to supervisors and management
3. Manage *non*-routine/complex technical operations	3.1. Apply a ***depth and breadth of knowledge and experience*** to all operations 3.2. Recognise and anticipate potential problems in both routine and ***non-routine and complex technical operations***, and implement contingency planning 3.3. Adapt to client paperwork and record keeping forms and document unusual requests 3.4. Work independently of management 3.5. Take responsibility for decision-making processes on the job

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	3.6. Prepare necessary reports for a range of relevant topics
4. Use technology effectively	4.1. Use well developed physical and sensory skills to operate equipment to fullest capacity and anticipate potential problems 4.2. Apply scientific and technological principles to evaluate and reshape operational procedures

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.
Required skills
Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out or possess the following, as required to manage non-routine, complex situations: • apply legislative, organisation and site requirements and procedures for managing non-routine, complex situations • reading and writing skills, to research problems and write reports • mathematical skills to carry out technical problem solving • plant diagnostic skills
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to manage non-routine, complex situations: • communications systems, processes and procedures • high level mathematical skills • problem solving techniques and decision making • extensive operational knowledge

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for managing non-routine, complex technical situations • implementation of requirements, procedures and techniques for the safe, effective and efficient management of non-routine, complex technical situations • working with others to plan, prepare and manage non-routine, complex technical situations • evidence of the consistent successful management of non-routine, complex technical situations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake the management of non-routine, complex technical situations
	  • provision of clear and timely instruction and supervision by the individual of those involved in managing of non-routine, complex technical situations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Problems may include:	• formation problems • loss of sample • lost circulation • pressure formations • differential pressure sticking • hole deviation • loss of sample integrity • encountering unexpected contaminants, or contaminants in higher than expected concentrations • old mine workings • fishing • loss of penetration • sudden loss of pump pressure
Information sources may include:	• technical manuals • team members • previous experience • drilling logs • mine site plans • geological data
Depth and breadth of knowledge and experience may relate to:	• equipment • products • ground conditions • rigs • drilling methods and techniques
Non-routine and complex	• deep holes

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technical operations may include:	• formation kicks • bore hole stability • directional control • geometry bore holes and/or multilateral completion/technology

Unit Sector(s)

Business Effectiveness

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBEF402A Supervise on-site operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of on-site operations in the resources and infrastructure industries. It includes managing on-site safety, communicating regularly with others, diagnosing and solving routine and non-routine problems, controlling work programs to ensure objectives are met, coordinating work of the team and maintaining operating records. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Manage on-site safety	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Relay safety rules and regulations, legislation and specific site instructions to team 1.3. Conduct camp, site and equipment safety audits as required 1.4. Identify ***hazards*** on worksite 1.5. Determine a range of preventative measures for potential work hazards on site 1.6. Communicate procedures for the use of personal protective equipment and installed safety equipment clearly to the team 1.7. Provide clear instructions to all team in emergency drills and their application 1.8. Establish methods for contacting all necessary medical services 1.9. Provide site safety and/or equipment safety induction training as required to new personnel and visitors to the worksite 1.10. Complete occupational health and safety records for work area accurately in accordance with workplace/company requirements
2. Communicate regularly with client, team, and other relevant parties	2.1. Brief team and other relevant parties regularly of up to date scope of activities 2.2. Maintain a good working relationship with landholder/client 2.3. Honour confidentiality clauses in contract 2.4. Communicate progress, problems encountered/anticipated and results regularly to client/supervisor as required 2.5. Maintain regular communication by radio/telephone or other means to report progress and/or request information or assistance
3. Diagnose and solve routine and non-routine problems	3.1. Confirm the existence and immediate effects/potential effects of the ***problem*** by investigation 3.2. Identify a clear and accurate definition of

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	the problem 3.3. Identify the preferred option after an analysis of available information and formulate ***action plans*** 3.4. Obtain additional equipment, contractors and/or advice as needed 3.5. Outline any contingency plans 3.6. Organise alternative duties for teams if problems cause hold-ups in production 3.7. Implement the preferred option
4. Control work program to ensure objectives are met	4.1. Monitor work progress regularly and take corrective action if necessary 4.2. Ensure availability of materials is consistent with work schedules and appropriate to the requirements of the task 4.3. Allocate specific tasks to make effective use of team 4.4. Prepare alternative plans if required 4.5. Implement alternative plans as required to meet work program objectives
5. Coordinate work of the team	5.1. Make all members of the team aware of their roles and responsibilities in the work plan 5.2. Set operational targets in consultation with team, and check at regular intervals 5.3. Provide assistance when requested, to meet operational targets 5.4. Acquire resources required to support changing work requirements 5.5. Allot work loads and required resources in accordance with modified work plans 5.6. Communicate agreed time lines for tasks to team
6. Maintain operating records	6.1. Determine range of ***records***, reports and their required frequency 6.2. Keep daily running records to facilitate the completion of necessary documentation 6.3. Complete logs, records and shift reports with numbers, quantities, dates and succinct descriptions 6.4. Note variations to contract requirements on log and discuss with originator and management if possible

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	6.5. Complete required written ***reports*** and submit/distribute 6.6. Take accurate measurements as required and record as required

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to supervise on-site operations:

- apply legislative, organisation and site requirements and procedures for supervision of on-site operations
- reading and writing ability
- communication ability to train and instruct, receive and pass on information
- hazard identification and risk assessment skills
- delegation and people management skills
- problem solving skills
- record keeping and logging skills
- counselling

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to supervise on-site operations:

- operational and maintenance procedures
- fault finding and troubleshooting techniques
- team work
- communication systems, processes and procedures (e.g. two way radio)
- graphical representation (e.g. maps, diagrams, and their uses for interpretation and prediction)
- required documentation (e.g. requisition forms, daily log reports)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for supervision of on-site operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of supervision of on-site operations • working with others to plan, prepare and conduct on-site operations • evidence of the consistent successful supervision of on-site operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical applications using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the supervision of on-site operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the on-site operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazards may include:	• accidents • fire • emergencies such as chemical spills • confined spaces, hot work areas • environmental factors (e.g. heat/cold, flood, storm, lightning, contaminated sites, sunburn) • flammable gases/liquids, explosives • noise, dust, slips, trips and falls • plant hazards such as rotating hazards and circulation hazards • in-hole fluids, gases and contaminants • hazards associated with aircraft, over water drilling, winching, crane use and forklifts
Problems may include:	• safety issues • environmental factors • transport difficulties • equipment failure
Downhole problems (drilling) that may be encountered may include:	• formation problems • loss of sample/sampling difficulties • lost circulation • pressure formations • differential pressure sticking • hole deviation • loss of sample integrity • encountering unexpected contaminants, or contaminants in higher than expected concentrations

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	• old mine workings • fishing • loss of penetration • sudden loss of pump pressure
Action plans to solve problems are prepared according to:	• objectives • resource requirements • coordination and feedback requirements • safety requirements and risk assessment priority requirements • company operating procedures
Records may include:	• daily operations reports • petty cash records • records of other purchases, i.e. accounts/credit cards • time sheets • plant and vehicle logs • maintenance records
Reports may include:	• operations reports • evaluation of sites • evaluation of equipment • injury and accident reports

Unit Sector(s)

Business Effectiveness

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBEF601A Conduct business negotiations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of business negotiations in the resources and infrastructure industries. It includes establishing and confirming the worksite's business objective(s), conducting business negotiations and evaluating negotiation outcomes. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish and confirm the worksite's business objectives	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and target business opportunities available to the operations 1.3. Facilitate discussions with ***stakeholders*** to provide strategies and ideas to meet outcome(s) 1.4. Analyse information to allow for assessment of the short-term and long-term position of the business 1.5. Ensure agreed decisions and recommendations fall within the operations business objectives, relevant ***legislative requirements*** and are appropriate to desired outcomes
2. Conduct business negotiations	2.1. ***Consult*** and/or lobby key stakeholders who can assist in achieving the outcome(s) 2.2. Ensure preparation for the meeting is sufficient to enable effective business ***negotiation*** and to achieve desired outcome(s) 2.3. Ensure contributions to the negotiations are clear, concise and relevant which help to achieve business objective(s) 2.4. Document/record appropriate and accurate records and key outcomes of negotiations
3. Evaluate negotiation outcomes	3.1. Evaluate outcomes of negotiations 3.2. Refer outcomes of negotiations to stakeholders who assisted in preparation of strategies 3.3. Review outcomes of negotiations for improvement 3.4. Follow up, and circulate as necessary, outcomes and decisions

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct business negotiations:

- apply legislative, organisation and site requirements and procedures for conducting business negotiations
- initiate decision making actions
- establish the rules of procedure
- adopt communications styles appropriate to listeners and situations, including selecting an appropriate time and place
- identify the information needs of participants
- modify communications in response to feedback from participants
- actively encourage the free exchange of information
- encourage decisions which are realistic for the situation
- produce own ideas from experience and practice

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct business negotiations:

- advanced written and oral communication methods
- organisational goals and objectives
- subject/product knowledge
- statutory and site rules, policies, procedures and regulations
- worksite operating procedures
- risk management processes and techniques
- risk control and management systems
- reporting and recording procedures
- access, evaluate and apply data from organisational systems
- action planning method

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting business negotiations • implementation of procedures and techniques for the safe, effective and efficient conduct of business negotiations • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of business negotiations methods that best meet the required outcomes • working with others to undertake and complete the conduct of business negotiations • consistent successful conduct of business negotiations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge in undertaking the conduct of business negotiations
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of business negotiations methods that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete business negotiations
	  • provision of clear and timely required support and advice on conducting business negotiations

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Stakeholders may include:	• relevant regulatory authorities • tenders • project managers • contractors • employees • community • customers • suppliers
Legislative requirements may include:	• common law • dangerous goods • industrial relations • industry licensing • local government • mines Acts • navigation • planning and assessment • trade practices • waterways • weights and measures • workers compensation • WorkCover • maintenance of records according to statutory/legal standards and procedures • provision of information and training • relevant regulations and code of practice relating to statutory/legal compliance • site representatives and committees

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	• issue resolution
Consulting may include:	• seeking views other than your own • varying issues and contexts • committees • consultation with statutory/legal authorities • consultation with industrial representatives • consultation with agencies/site representatives • issue resolution procedures • participative/consultative procedures conducted by supervisory staff
Negotiations may include:	• internal or external parties • formal or informal meetings • short term or ongoing • multi-lingual and cross-cultural

Unit Sector(s)

Business Effectiveness

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBEF602A Establish and evaluate operational performance management systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and evaluation of operational performance management systems in the resources and infrastructure industries. It includes identifying and researching the organisation's needs, preparing business plans and budgets, designing and implementing performance indicators, monitoring and reviewing performance, and explaining the cause of success or failure in operational performance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and research organisation's needs	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Analyse organisation goals, objectives and strategies to gain direction as to the type of research to be undertaken 1.3. Investigate and analyse site environments to develop options, strategies and anticipated outcomes 1.4. Clearly state in research briefs the objectives and outcomes, and the requirements for presentation of information 1.5. Develop and implement strategies that translate the objectives into the planning process 1.6. Evaluate existing system and equipment suitability 1.7. Research, evaluate, select and purchase new equipment 1.8. Analyse and interpret research information to establish options and opportunities
2. Prepare business plans/budgets	2.1. Involve internal and external ***stakeholders*** in the planning process in a way that uses their contribution effectively and gains their support for the outcomes 2.2. Prepare and present business plans/budgets including contingency plans 2.3. Prepare plans that contain a clear statement of priorities and schedules 2.4. Provide optional strategies in the contingency plans in the event that all ***resources*** are not secured or the situation changes 2.5. Identify all resources required for plans and strategies and how they will be acquired and utilised 2.6. Develop implementation plans and schedules in line with operational requirements incorporating support from all stakeholders
3. Design and implement	3.1. Set and agree to operating targets

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performance indicators	3.2. Establish and monitor systems against human/financial/ physical performance targets 3.3. Establish and gain agreement on reporting mechanisms 3.4. Ensure that criteria used to evaluate performance criteria provide sufficient information to make recommendations
4. Monitor and review performance	4.1. Interpret and analyse financial/human and physical information to monitor the relationship between budget/forecast/past performance and actual performance 4.2. Prepare and gain agreement on operating budgets by relevant stakeholders 4.3. Establish systems to monitor financial/human and physical performance using appropriate technology 4.4. Identify variations in performance and take action to rectify out-of-specification results 4.5. Make recommendations regarding future planning within the organisation's continuous improvement processes 4.6. Produce and analyse management reports in accordance with company/auditors requirements 4.7. Present operational performance in accurate, clear and concise manner, appropriate to audience
5. Explain the cause of success or failure in operation performance	5.1. Base explanations of the cause of success or failure on sufficient, reliable evidence 5.2. Explain site performance in an accurate, clear and concise manner appropriate to the audience 5.3. ***Evaluate***, consider and present alternate explanations for operational performance 5.4. Incorporate lessons drawn from success or failure in future operational planning and continuous improvement activities

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to establish and evaluate an operational performance management system:

- apply legislative, organisation and site requirements and procedures for establishment and evaluation of an operational performance management system
- monitor mining plant and equipment performance and maintenance
- manage people and processes
- develop business plans
- prepare operating budgets and forecast trends
- analyse and review production costs and equipment/plant operating costs
- manage projects and tasks
- coordinate resources human, financial and physical
- control operating costs
- gain statutory/legal approvals
- prepare tender specifications
- implement change
- access and use appropriate technologies
- prepare and present management reports
- negotiate with internal/external customers, community and statutory/legal authorities
- resolve conflict

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to establish and evaluate an operational performance management system:

- site operations
- site products and services
- site plant and equipment
- team management
- quality systems
- relevant statutory/legal control
- organisational objectives
- resource quantification
- financial models

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- fundamentals of contract law
- human resource policies and practices
- industrial awards/enterprise agreements
- business planning
- risk management, principles, strategies and applications
- customer/client relations
- organisational change and development
- environmental management
- occupational health and safety
- computer applications
- negotiation techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and evaluating operational performance management systems • implementation of procedures and techniques for the safe, effective and efficient establishment and evaluation of operational performance management systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of operational performance management systems that best meet the required outcomes • working with others to undertake and complete the establishment and evaluation of operational performance management systems • consistent successful establishment and evaluation of operational performance management systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection

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	and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical applications using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the establishment and evaluation of operational performance management systems
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of operational performance management systems that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the

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	candidate's: • working with others to undertake and complete the establishment and evaluation of operational performance management systems • provision of clear and timely required support and advice on the establishment and evaluation of operational performance management systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements and procedures
	• manufacturer's guidelines and specifications
	• Australian standards
	• operational requirements
	• budget requirements
	• risk management
	• statutory compliance
	• development approval, mining licenses (or equivalent), which may include:
	  • OHS
	  • environmental
	  • quality
	  • purchasing
	  • contract management
	  • administration (including records and reports)
	• common law
	• dangerous goods
	• development of training policies/programs to aid compliance
	• industrial relations
	• industry licensing
	• local government
	• Mines Act
	• navigation
	• planning and assessment
	• trade practices
	• waterways
	• weights and measures
	• workers compensation/WorkCover
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

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Stakeholders may include:	• regulatory authorities • tenders • operating managers • project managers • contractors • employees • community • suppliers • customers
Resources may include:	• people • buildings/facilities • finance • equipment • power/energy • technology • information
Evaluation may include:	• cost-benefit analysis • pay-back period • discounted cash flow and net present value

Unit Sector(s)

Business Effectiveness

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBEF603A Manage decision making process

Modification History

Not applicable.

Unit Descriptor

This unit covers the management of the decision-making process in the resources and infrastructure industries. It includes establishing the decision-making process, obtaining and analysing the information needed for decision making, making decisions, and advising and informing others. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish the decision-making process	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Develop policies which clearly express the worksite's commitment to decision making at the appropriate level 1.3. Clearly define and allocate responsibilities and duties which allow the implementation and integration of the decision-making process 1.4. Develop systems and procedures to provide the appropriate information to manage the decision-making process 1.5. Provide information to the level necessary for effective decision making 1.6. Notify decisions having impact beyond the decision maker's area of responsibility to the area(s) concerned in a timely manner
2. Obtain and analyse the information needed for decision making	2.1. Research the advice and information needs of recipients in ways which are appropriate and sufficient and take account of worksite constraints 2.2. Identify the information needed to make the required decisions at the various levels/sections of the worksite 2.3. Select information which is accurate, relevant to the objectives, and sufficient to arrive at reliable decisions 2.4. Ensure that methods of obtaining information are consistent with worksite values, policies and legal requirements 2.5. Take prompt and effective remedial action where information is inadequate, contradictory or ambiguous 2.6. Use methods of analysis which achieve the objectives, identify patterns and trends, and lead to clear conclusions 2.7. Ensure that a record of the analysis is sufficient to indicate assumptions and decisions made at each stage
3. Make decisions	3.1. Base decisions on sufficient, valid and reliable information and analysis

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	3.2. Ensure that decisions are consistent with worksite values, policies, guidelines and procedures 3.3. Make decisions in time for appropriate action to be taken
4. Advise and inform others	4.1. Make timely decisions and communicate clearly to those who need to know 4.2. Provide advice and information at a time and place, and in a form and manner appropriate to the needs of recipients 4.3. Provide information which is accurate, current, relevant and sufficient 4.4. Provide advice which is consistent with worksite policy, procedures and constraints and supported by reasoned arguments and appropriate evidence 4.5. Confirm recipients' understanding of the advice and information provided 4.6. Use feedback from recipients to improve the way advice and information is provided 4.7. Use feedback processes effectively to ***monitor*** the implementation and impact of decisions

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to manage decision-making processes:

- apply legislative, organisation and site requirements and procedures for managing decision-making processes
- clearly relate goals and actions to the strategic aims of the worksite
- identify and interpret reports and information
- take opportunities when they arise to achieve the longer-term aims or needs of the worksite
- listen actively, ask questions, clarify points and rephrase others' statements to check mutual understanding
- adopt communication styles appropriate to listeners and situations, including selecting an appropriate time and place
- create and prepare strategies for influencing others
- understand the culture of the worksite and act to work within it or influence it
- establish information networks to search for and gather relevant information
- seek information from multiple sources
- produce a variety of solutions before taking a decision
- produce own ideas from experience and practice
- take decisions which are realistic for the situation
- take decisions in uncertain situations or based on restricted information when necessary

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to manage decision-making processes:

- strategic planning
- industrial awards/enterprise agreements
- OHS
- organisational change and development
- corporate, group and individual goal setting techniques
- corporate planning model and techniques
- critical path analysis and planning methods and techniques
- statutory and site rules, policies, procedures and regulations
- action planning methods

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- information technology

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for managing decision-making processes • implementation of procedures and techniques for the safe, effective and efficient management of decision-making processes • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of decision-making processes that best meet the required outcomes • working with others to undertake and complete the management of decision-making processes • consistent successful management of decision-making processes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge in undertaking of the management of decision-making processes
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of decision-making processes that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the management of decision-making processes
	  • provision of clear and timely required

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	support and advice on the management of decision-making processes
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • trade practices • weights and measures • waterways • workers compensation/WorkCover • planning and assessment • local government • dangerous goods • industry licensing • industrial relations • navigation • Mines Act • common law • development of training policies/programs to aid compliance • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Monitoring may include:	• review of written reports • performance appraisal • auditing procedures

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Unit Sector(s)

Business Effectiveness

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBEF604A Conduct feasibility study

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of feasibility studies in the resources and infrastructure industries. It includes identifying and researching organisation's needs, carrying out environmental investigations, assessing feasibility, and preparing reports and presenting findings and recommendations. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and research organisation's needs	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Analyse organisation goals, objectives and strategies to gain direction as to the type of research to be undertaken 1.3. Investigate and analyse environments to develop options, strategies and anticipated outcomes 1.4. Prepare research brief that clearly states the objectives and outcomes, and the requirements for presentation of information 1.5. Develop and implement strategies that translate the objectives into the planning process
2. Carry out environmental investigation	2.1. Establish information requirements and identify and access sources 2.2. Establish strategies and systems to support analysis of the environment 2.3. Scan the environment to identify and assess the factors that impact on site development 2.4. Identify and explore market opportunities to assist the organisation to forecast trends and options 2.5. Determine quantity and quality of ***resources*** 2.6. Identify and analyse threats and opportunities and use them to optimise project outcomes 2.7. Undertake titles search 2.8. Document legislative and organisational requirements
3. Assess feasibility	3.1. Estimate resource requirements and utilisation to reflect customer requirements, the organisation's business plans and the cost to the organisation of providing the products and services 3.2. Review and update information to ensure appropriate data is gathered to assess project viability 3.3. Seek preliminary opinion from legislative

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	and regulative bodies
4. Prepare report and present findings/ recommendations	4.1. Prepare preliminary reports for management briefings 4.2. Document recommendations for future action and agreement gained by stakeholders

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct feasibility studies:

- apply legislative, organisation and site requirements and procedures for conducting feasibility studies
- monitor and maintain quarry plant and equipment
- manage people and processes
- prepare feasibility proposals
- develop business plans
- prepare operating budgets and forecast trends
- analyse and review production costs versus equipment/plant operating costs
- interpret survey data
- interpret geological data
- manage projects and tasks
- evaluate new and used equipment using appropriate techniques
- control operating costs
- gain statutory/legal approvals
- prepare tender specifications
- negotiate and finalise contracts
- implement change
- access and use appropriate technologies
- prepare and present management reports
- negotiate with internal/external customers, community and statutory/legal authorities
- resolve conflict

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct a feasibility study:

- worksite operations
- site products and services
- site plant and equipment
- team management
- quality assurance principles
- statutory/legal control

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- organisational objectives
- resource quantification
- financial models
- fundamentals of law and contract law
- human resource policies and practices
- industrial awards/enterprise agreements
- business planning
- risk management principles, strategies and applications
- customer/client relations
- organisational change and development
- environmental management
- occupational health and safety
- computer applications
- negotiation techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting a feasibility study • implementation of procedures and techniques for the safe, effective and efficient conduct of a feasibility study • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of methods to conduct a feasibility study that best meet the required outcomes • working with others to undertake and complete the feasibility study • consistent successful conduct of a feasibility study
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the feasibility study
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of methods of conducting a feasibility study that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the feasibility study
	  • provision of clear and timely required support and advice on the conduct of the feasibility study

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements and procedures
	• manufacturer's guidelines and specifications
	• Australian standards
	• risk management
	• statutory compliance
	• development approval, mining licences (or equivalent), which may include:
	  • occupational health and safety
	  • environmental
	  • quality
	  • purchasing
	  • contract management
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Resources may include:	• people • buildings/facilities • finance • equipment • environment • technology • information • time

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Unit Sector(s)

Business Effectiveness

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBEF605A Resource site plans and objectives

Modification History

Not applicable.

Unit Descriptor

This unit covers the resourcing of site plans and objectives in the resources and infrastructure industries. It includes reviewing the allocation of resources, evaluating proposals for expenditure, developing and maintaining worksite budgets and obtaining resources for worksite activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Review the allocation of resources	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Ensure that systems for reviewing the allocation of ***resources*** provide accurate, comprehensive and up-to-date information 1.3. Ensure that criteria used includes industry accepted performance measures for the allocation of resources 1.4. Ensure that the review indicates the performance of the worksite in comparison with other worksites 1.5. Ensure that the review shows how effective the worksite's methods are compared to alternative methods of allocating resources 1.6. Gather, store and use information on the allocation of resources
2. Evaluate proposals for expenditure	2.1. Ensure that selected expenditure evaluation criteria are relevant, fair and clear 2.2. Evaluate proposals against the stated criteria within the agreed timescale 2.3. Evaluate proposals for their expected benefits and costs 2.4. Ensure that the accepted proposals clearly show how they support the worksite's objectives, strategies, values and policies 2.5. Highlight weaknesses or inconsistencies in proposals to form a justifiable case for rejection or amendment 2.6. Conduct ***negotiations*** over proposals in a manner likely to ensure the cooperation, confidence and goodwill of the people involved
3. Develop and maintain worksite budgets	3.1. Analyse and interpret financial information for profit/productivity performance 3.2. Access performance and financial systems and processes to assess progress in achieving profit/productivity plans and targets 3.3. Develop, monitor and maintain the worksite's annual budget 3.4. Manage systems, procedures and records

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	associated with documenting resource acquisition and usage
4. Obtain resources for the worksite activities	4.1. Present a case for obtaining resources which is clear, consistent and supported by sound argument 4.2. Pursue realistic alternative courses of action when the resources required are not fully realised 4.3. Ensure that all agreements, communications and other activities to obtain resources are consistent with the mission, values and policies of the worksite

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to resource site plans and objectives:

- apply legislative, organisation and site requirements and procedures for resourcing of site plans and objectives
- understand how the different parts of the worksite and its environment fit together
- clearly relate the goals and actions to the strategic aims of the worksite
- adopt communication styles appropriate to listeners and situations, including selecting an appropriate time and place
- develop and use contacts to trade information, and obtain support and resources
- create and prepare strategies for influencing others
- understand the culture of the worksite and act to work within it or influence it
- actively encourage the free exchange of information
- make best use of existing sources of information
- seek information from multiple sources
- break processes down into tasks and activities

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to resource site plans and objectives:

- financial analysis, planning and management
- advanced communication techniques
- critical path analysis, planning methods and techniques
- human resource management
- assertive techniques
- risk management processes and techniques
- industrial awards/enterprise agreements
- OHS

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for resourcing site plans and objectives • implementation of procedures and techniques for the safe, effective and efficient resourcing of site plans and objectives • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of methods of resourcing site plans and objectives that best meet the required outcomes • working with others to undertake and complete the resourcing of site plans and objectives • consistent successful resourcing of site plans and objectives
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge in undertaking of the resourcing of site plans and objectives
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection for resourcing site plans and objectives that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the resourcing of site plans and objectives

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	• provision of clear and timely required support and advice on the resourcing of site plans and objectives
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian Standards • common law • dangerous goods • development of training policies/programs to aid compliance • industrial relations • industry licensing • local government • mines Act • navigation • planning and assessment • trade practices • waterways • weights and measures • workers compensation/WorkCover • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Resources may include:	• people • finance • equipment • environment • buildings/facilities • technology • information
Negotiations may be with a variety of internal or external sources and may be:	• formal or informal • short term or ongoing • multi-lingual and cross-cultural • enterprise agreements • legislation regulation compliance including:

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	• relative authorities • project managers • employees • contractors • customers • the community

Unit Sector(s)

Business Effectiveness

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBHD301A Conduct surface blast hole drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of surface blast hole drilling operations in resources and infrastructure industries. It includes planning and preparing for operations, marking out drill patterns, operating the drill system, relocation of the drill, and carrying out post-operational procedures.

Application of the Unit

Surface blast hole drills may include: diesel, electric, or pneumatic powered; pneumatic or hydraulic operated; rotary or rotary percussion; and tracked or wheeled drill rigs.
This unit is appropriate for those working in driller roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conducting of surface blast hole drilling operations 1.2. Obtain, interpret and clarify ***work requirements and procedures*** for the satisfactory completion of the allocated job 1.3. Access, interpret and apply ***geological*** and ***survey data*** required to complete the allocated job 1.4. ***Inspect*** and ***prepare*** work area in coordination with others to work requirements and procedures 1.5. Identify, manage and report ***potential hazards and risks*** in accordance with requirements and procedures 1.6. Resolve ***coordination*** requirements with others at the site prior to commencing and during work activities in accordance with requirements and procedures 1.7. Select ***personal protectiveequipment*** appropriate for work activities in accordance with requirements and procedures
2. Mark out drill pattern	2.1. Adjust drill pattern within authorised tolerances and ***drilling plan*** in accordance with requirements and procedures 2.2. Obtain authorisation for changes to drill pattern plan in accordance with requirements and procedures 2.3. Place indicators on drill pattern in preparation for drilling in accordance with requirements and procedures 2.4. Mark out drill pattern ensuring it is visible and aids the drilling process in accordance with site requirements and procedures 2.5. Protect pre-existing drill holes according to characteristics of hole and in accordance with requirements and procedures
3. Operate the drill system	3.1. Carry out ***pre-start***, ***start-up***, ***park-up and shutdown procedures*** in accordance requirements and procedures

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	3.2. Locate and set up drill and equipment according to drilling plan in accordance with requirements and procedures 3.3. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** in accordance with requirements and procedures 3.4. Conduct, control and monitor operations within the equipment limitations and requirements and procedures 3.5. Stabilise hole by collaring and by adjusting drilling techniques 3.6. Act on or report monitoring systems and alarms in accordance with the requirements and procedures 3.7. Recognise and respond to hazardous and emergency situations in accordance with the requirements and procedures 3.8. Complete work in accordance with the agreed work requirements and within the operating capacity of the allocated equipment 3.9. Adhere to emergency procedures to ensure safety of personnel, plant and equipment 3.10. ***Monitor*** material for quality during the drilling process at predetermined depths
4. Relocate drill	4.1. Receive route and location plan and confirm them by site inspection, in accordance with requirements and procedures 4.2. Complete and/or follow ***work area preparation***, in accordance with requirements and procedures 4.3. Resolve coordination issues in accordance with requirements and procedures 4.4. ***Relocate*** drill in accordance with the requirements and procedures
5. Carry out post-operational procedures	5.1. Inspect, fault find and report in accordance with requirements and procedures 5.2. Carry out ***routine operator servicing***, ***maintenance and housekeeping*** tasks in accordance with requirements 5.3. Provide operator support during preparation for and conduct of major

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	maintenance tasks in accordance with requirements 5.4. Maintain and process ***records and reports*** in accordance with requirements and procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct surface blast hole drilling operations:

- apply legislative, organisation and site requirements and procedures
- interpret legislative requirements and procedures
- interpret site requirements and procedures
- interpret manufacturer's requirements and procedures
- interpret work requirements
- interpret geological and survey data
- identify worksite hazards and response procedures
- read and interpret plans, reports, maps and specifications
- interpret equipment technical information
- organise work tasks
- apply drilling techniques
- apply maintenance and house keeping requirements and procedures
- operate and maintain drilling and ancillary equipment
- use communications equipment
- maintain records
- prepare reports
- work in a team
- carrying out relevant calculations, which may include; addition, subtraction, multiplication, division
- use appropriate instruments to measure volume, mass and length

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct surface blast hole drilling operations:

- legislative, site and manufacturer's requirements and procedures
- worksite coordination requirements and procedures
- site operating techniques and systems
- monitoring systems and alarms requirements and procedures
- ground preparation requirements and procedures
- inspection, fault finding and reporting requirements and procedures
- routine operator servicing, maintenance and housekeeping requirements and

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procedures
- site environmental and heritage requirements and constraints
- dust suppression techniques
- drill system characteristics, technical capability and limitations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting surface blast hole drilling operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of surface blast hole drilling operations • working with others to undertake and complete surface blast hole drilling operations that meets all of the required outcomes • consistent timely completion of surface blast hole drilling operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete surface blast hole drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • customisation of assessment and delivery environment to sensitively accommodate cultural diversity • Aboriginal people and other people from a non English speaking background may have second language issues
Work requirements and procedures may come from briefings, handovers, and work orders and may be written or verbal, formal or informal, depending on the complexity of the process and may include:	• nature and scope of tasks • the drill pattern plan • achievement targets • operational conditions • dust suppression • site layout and out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects, • hazards and potential hazards • coordination requirements or issues
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • water tables or other water sources
Survey data may include relevant site-specific information in relation to:	• floor heights • bench widths • grades

Inspection of the work area may include:	• identification of hazards
	• confirming geological and survey data, which may include:
	  • high wall and low wall condition
	  • amount of scale
	  • stability of ground

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	• broken ground • degree of compaction • dry and wet ground • location of water table • slope of working surface • old underground workings and voids • determination of appropriate path of movement for equipment
Preparation of the work area may include:	• selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection • preparing floor, pads, roads, ramps and bench requirements • pads that are flat, sloping or benched
Potential hazards and risks may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground • unstable faces • vehicles • Installed services • damaged or defective pressurised hoses and fastenings • powerlines • dust • noise • conveyors • overhead services • void

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	• tow and bent rods • changing work conditions • void management
Coordination may include with:	• shotfirer • mobile plant operators • processing plant operators • maintenance personnel • cable reelers • water truck operators • service vehicle operators • crane and float operators • contractors • other drillers • inspectors • supervisors • visitors
Drilling plan may be written or verbal, formal or informal, depending on the complexity of the process and may include:	• access road plan • drill pattern • equipment and resource allocations/requirements • face plan • geological details • mine site • services • pre-start and start-up procedure may include: • external check of the machine • inspection of attachments to ensure security and identify defects • checking of fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • carry out lubrication • checking of display instrumentation and gauges (indicators, gauges, laser levels), computer systems, engine and stop engine lights • inspection of air filter restriction indicator • inspection and checking of cab (horn, lights, air conditioner) • testing of engine and stop engine lights • testing visual and audio warning devices and lights • checking instruments and control lever

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	• reporting of defects and damage
Pre-start and start-up procedures may include:	• external check of the machine • checking and toping up fluid levels (including windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • lubrication • inspection of attachments to ensure security and defects • instrument checks (indicators, gauges, laser levels, computer systems. engine and stop engine lights) • control lever checks • reporting defects and damage • air filter restriction indicator • cab (horn, lights, air conditioner) • visual and audio warning devices and lights
Park-up and shutdown procedures may include:	• securing equipment as required by site procedures • rendering attachments safe • clearing access ways
Equipment may include:	• witches hats • tapes, signs, flags, pegs • rope • measuring tape • cutting implements • lifting and handling equipment (winch, crane, block and tackles) • ancillary equipment (generators, pumps, lights, compressors, cleaning equipment, power tools and hand tools)
Operating techniques may include:	• locating the drill, including using positioning systems (global or other) • setting up the drill • adding and removing drill steel, rods, pipes, casing and other down hole tools • stabilisation the drill angle • selecting and size and type • controlling drill depth • controlling speed • adjustment of feeds • controlling rotation and feed pressure, • controlling pull force • compacting

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	• controlling the hammer
	• monitoring and adjusting associated equipment performance
	• applying dust suppression requirements
	• collaring of holes
	• rod handling
	• removing debris
	• working safely around:
	  • overhead powerlines
	  • other machines and personnel

Changing work conditions may include:	• variation in drill angle • problems with face stability • variation in rock types or ground conditions • down hole problems • hole deviation • loss of circulation return • loss of rod or bit • rod or bit breakages • variations in weather conditions • day and night • encountering old workings
Monitoring of materials may include:	• sampling • visual inspection
Relocate may include:	• walking • driving • towing • transporting • cable location and handling

Routine operator service, **maintenance and housekeeping** may include:	• scheduled servicing
	• changing bits, rods, shanks and drive bushes
	• greasing
	• bit sharpening and tool servicing
	• cleaning, which may include:
	  • degreasing
	  • forced air
	  • steam cleaning
	  • vacuum
	  • water
	  • centraliser/gate adjustment/repair
	  • dust collector/filter bag changes

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	• accumulator recharging • drifter travel alignment and changing • removing: • broken drill bits • rags • rock chips
Records and reports may include:	• rotation and feed pressure • rods, bits and associated equipment usage • sampling records • work as completed sketches • bore hole collar levels • drilling rate (m/hr) • fuel usage • computer readings • end of shift documentation • supplies logs • work logs

Unit Sector(s)

Blast Hole Drilling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBHD302A Conduct underground development drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting development drilling in underground metalliferous mines. It includes: planning and preparing for drilling; drilling and monitoring progress; packing-up the drill site and carrying out operator maintenance and housekeeping activities.

Application of the Unit

Drill rigs may include: diesel, electric, hand-held, hydraulic, pneumatic, rotary, track, wheeled. This unit is appropriate for those working in driller roles, in underground mines, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting development drilling in underground metalliferous mines 1.2. Receive, interpret and clarify shift change over details including relevant geo-technical details 1.3. Select and use appropriate ***personal protective equipment*** 1.4. Inspect and assess site conditions to determine if scaling is required and take action according to site requirements 1.5. Conduct ***equipment pre-start checks*** to ensure ***equipment*** is safe and ready to use 1.6. Confirm work area ventilation before entry into work area 1.7. Check job site and identify and manage possible misfires
2. Drill and monitor progress	2.1. Conduct work according to site procedures, regulations, OHS, other relevant legislation, manufacturer's specifications safely and efficiently 2.2. 2 Identify, manage and report ***hazards and potential risks*** according to ***drilling plan*** 2.3. Use approved ***dust suppression and extraction*** methods 2.4. Maintain safety of driller and surrounding ***personnel*** 2.5. Operate equipment safely within working environment limitations and face/ground conditions 2.6. Interpret drill plans then drill holes and realign ***equipment*** according to drill design 2.7. Monitor site conditions and adjust ***drilling techniques*** and components to maintain drilling operations 2.8. Monitor drilling progress by monitoring ***equipment indicators*** 2.9. Remove drill cuttings and sludge to ensure drill hole remains clean 2.10. Diagnose and take appropriate

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	action to manage ***drilling problems*** and advise appropriate personnel 2.11. Mark misdirected drill holes 2.12. Install collar pipes or lifters in readiness for charging
3. Pack up drill site	3.1. De-rig equipment 3.2. Clear site of debris 3.3. Remove ***auxiliary services*** to allocated area 3.4. Confirm equipment is ready for transport
4. Carry out operator maintenance	4.1. Carry out shutdown procedures 4.2. Service and make minor adjustments to equipment 4.3. Inspect equipment and reports faults and make equipment available for routine operational servicing
5. Carry out housekeeping activities	5.1. ***Clean equipment*** to maintain condition of equipment and ensure safe and efficient operations 5.2. Clean and stores auxiliary service equipment 5.3. Complete all required documentation clearly, concisely and on time 5.4. Pass on end of shift information to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct underground development drilling:

- apply legislative, organisation and site requirements and procedures
- maintain, clean and operate equipment
- apply drilling techniques
- apply driving techniques
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct underground development drilling:

- auxiliary services procedures
- cleaning procedures
- down hole problems
- drilling procedures
- environmental procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data (e.g. basic)
- hazardous goods procedures (e.g. handling and transport)
- inspection procedures
- isolation procedures
- manufacturer's specifications
- mining regulations
- operational procedures and checks
- recovery procedures
- road rules
- site procedures
- site safety requirements
- start-up and shutdown procedures
- storage procedures
- towing procedures
- underground procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conducting of underground development drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of underground development drilling • working with others to undertake and complete underground development drilling that meets all of the required outcomes • consistent timely conducting of underground development drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete underground development drilling

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • customisation of assessment and delivery environment to sensitively accommodate cultural diversity • Aboriginal people and other people from a non English speaking background may have second language issues
Equipment may include:	• collar piping • covering devices (e.g. plugs, cones, hessian bags) • drill rig (e.g. electric/hydraulic, pneumatic) • drilling components (e.g. drill rods, bits, augers, down hole hammer, down hole tools) • extra lighting (e.g. flood lights) • flags • hoses • inclinometer • lifting and handling equipment • long hole extension drills • measuring tape • oils • paint (e.g. spray cans) • plates • recovery equipment • scaling bars • signs • support vehicles • tamping sticks • tapes • witches hats • recommended/required PPE

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Pre-start checks may include:	• air filter restriction indicator • cab (e.g. horn, lights, air conditioner) • computer systems • display instrumentation and gauges (e.g. indicators, gauges, laser levels) • engine and stop engine lights (e.g. orange and red) • fire and suppression systems • fire extinguishers • fluid levels (e.g. windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • visual and audio warning devices and lights • drilling equipment (e.g. drill rig booms, drifters, hydraulic hoses, drill steels, bits and couplings) • drill rig platform, steps and hand rails
Potential hazards and risks may include:	• ground control failure • lack of ventilation • loose material on working surface • misfires • gases • entry by unauthorised personnel • uncovered open holes • unstable ground conditions • airborne dust and fibres • unstable footing • poor housekeeping • noise • rotating machinery (e.g. drill steels) • electrical hazards • airborne rock fragments • vibration from hand held equipment
Drilling plan may include:	• access to inclines and decline depending on the complexity of the process • drive plan • equipment and resource allocations/requirements • face • geological details • verbal or written instructions • mine site details

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	• services • stope
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (e.g. vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Personnel may include:	• blasters • contractors • drillers • drivers • holders of appropriate tickets • inspectors • licensed operators • maintenance staff • personnel authorised by mine management • service personnel • supervisors • surveyors • tradespersons
Drill techniques may include:	• adjustment to feed • compacting • hammer • removing debris • rotation • speed and pull force adjustments • adjustments to drill steel angle
Indicators for proposed holes may include:	• collar tubes • cones • pegs • spray painting
Drilling problems may be:	• environmental • geological (e.g. ground conditions) • mechanical (e.g. bogged)
Auxiliary services may include:	• compressed air • de-watering pumps • electricity • ventilation • water
Parts of **equipment cleaned** may	• platform • steps and hand rails (removal of oil, grease,

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include:	debris)

Unit Sector(s)

Blast Hole Drilling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBHD303A Conduct long hole drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of long hole drilling in the metalliferous mining industry. It includes planning and preparing drilling site, moving equipment and materials to site, drilling and monitoring progression, packing-up drill site, carrying out operator maintenance and housekeeping activities.

Application of the Unit

Long hole drill rigs may be diesel, electric, hand-held, hydraulic, pneumatic, rotary, track or wheeled. This unit is appropriate for those working in driller roles, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare drilling site	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conducting of long hole drilling 1.2. Plan and prepare work according to site procedures and relevant legislation 1.3. Receive interpret and clarify shift change over details and review historical information 1.4. Select appropriate personal protective equipment 1.5. Identify, manage and/or report ***hazards and potential risks*** according to the work plan 1.6. Inspect and assess site conditions to determine if scaling is required and take action according to site requirements 1.7. Place visible orientation marks to ***drill plan*** according to site procedures 1.8. Ensure ***auxiliary services*** are available 1.9. Erect physical barricades and signs and/or safety provisions to prevent unauthorised access 1.10. Identify and clearly mark butts/misfires according to site procedures 1.11. Ensure area is well ventilated before entry into work area using ***dust suppression and extraction methods*** 1.12. Conduct ***equipment pre-start checks*** to insure equipment is safe and ready to use
2. Move equipment and materials to site	2.1. Conduct work according to procedures and relevant specifications in a safe and efficient manner 2.2. Complete pre-start checks and confirm equipment is prepared for transportation 2.3. Identify and manage hazards and potential risks to ensure safe transportation to drill site 2.4. Transport ***equipment*** and attachments safely avoiding damage to equipment, site or injury to ***personnel*** according to road conditions

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	2.5. Position and stabilise equipment at site according to ground conditions 2.6. Connect auxiliary services 2.7. Read and interpret and align equipment with orientation marks
3. Drill and monitor progression	3.1. Conduct work according to procedures, requirements and specifications in a safe and efficient manner 3.2. Identify, manage and/or report hazards and potential risks according to work plan 3.3. Use approved dust suppression and extraction methods 3.4. Operate equipment safely within working environment limitations and face/ground conditions 3.5. Interpret drill plans then drills holes and realign equipment according to drill design and ***ground conditions*** 3.6. Monitor ground conditions and adjust ***drilling techniques*** and components to maintain drilling operations 3.7. Install collar pipes according to site procedures 3.8. Remove drill cuttings and sludge to ensure drill hole remains clean 3.9. Complete all required documentation clearly, concisely and mark misdirected holes according to site procedures
4. Pack-up drill site	4.1. Carry out shutdown procedures 4.2. De-rig equipment 4.3. Clear site of debris 4.4. Remove auxiliary services to allocated area 4.5. Confirm equipment is ready for transport
5. Carry out operator maintenance	5.1. Service and make minor adjustments to equipment 5.2. Visually inspect equipment and report faults and make equipment available for routine operational servicing 5.3. Provide operator support during preparation for, and conduct of maintenance tasks in accordance with site requirements
6. Conduct housekeeping	6.1. ***Clean equipment*** to maintain condition of

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activities	equipment and ensure safe and efficient operations 6.2. Clean and store auxiliary service equipment 6.3. Complete all required documentation clearly, concisely and on time 6.4. Pass on end of shift information to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct long hole drilling:

- apply legislative, organisation and site requirements and procedures
- operate, maintain and clean auxiliary equipment
- apply drilling techniques
- apply driving techniques
- use hand and power tools
- apply rod recovering techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct long hole drilling:

- auxiliary services procedures
- cleaning procedures
- potential down hole problems
- drilling equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data
- handling and transport of hazardous substances
- isolation procedures
- manufacturer's specifications
- mining legislation
- operational procedures and checks
- recovery procedures
- site safety requirements
- start-up and shutdown procedures
- storage procedures
- towing procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting long hole drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of long hole drilling • working with others to undertake and complete the long hole drilling that meets all of the required outcomes • consistent timely completion of long hole drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete long hole drilling

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazards and potential risks may include:	• ground control failure • lack of ventilation • loose material on working surface • misfires • gases • entry by unauthorised personnel • uncovered open holes • unstable ground conditions • airborne dust and fibres • unstable footing • poor housekeeping • noise • rotating machinery (drill steels) • electrical hazards • airborne rock fragments • premature explosions
Drill plan may include:	• access to inclines and decline depending on the complexity of the process • drill plan/equipment and resource allocations/requirements • geological details • verbal or written instructions • services • stope
Auxiliary services may include:	• compressed air

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	• de-watering pumps • electricity • ventilation/water
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Equipment pre-start checks may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • computer systems • display instrumentation and gauges (indicators, gauges, laser levels) • engine and stop engine lights (orange and red) • fire and suppression systems • fire extinguishers • fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • visual and audio warning devices and lights • drilling equipment (drill rig booms, drifters, hydraulic hoses, drill steels, bits and couplings) • drill rig platform, steps and hand rails
Equipment may include:	• collar piping • covering devices (plugs, cones, hessian bags) • drill rig (electric/hydraulic, pneumatic) • drilling components (drill rods, bits, augers, down hole hammer, down hole tools) • extra lighting (flood lights) • hoses • inclinometer • lifting and handling equipment • long hole extension drills • measuring tape • oils • paint (spray cans) • plates • recovery equipment • scaling bars • signs • support vehicles • tapes • witches' hats

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	• recommended/required PPE
Personnel may include:	• blasters • contractors • drillers • drivers • holders of appropriate tickets • licensed operators • maintenance staff • personnel authorised by mine management • service personnel • supervisors • surveyors • tradespersons
Ground conditions may include:	• broken ground • dry • location of water table • noise • slope of working surface • stability of ground • stable ground (compaction) amount of scale • ventilation characteristics (fumes, dust) • visibility • wet
Drilling techniques may include:	• adjustment to feed • compacting • hammer • removing debris • rotation • speed and pull force adjustments • adjustments to drill steel angle • recovering procedures
Equipment cleaned may include:	• platform • steps and hand rails (removal of oil, grease, debris)

Unit Sector(s)

Blasting Hole Drilling

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBHD304B Set-up and prepare for open cut drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers setting-up and preparing for open cut drilling operations in the mining and extractive industries. It includes: preparing the drilling site; marking out drill pattern; and moving equipment and materials to pattern.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare drilling site	1.1. Access, interpret and apply ***compliance documentation*** relevant to the setting-up and preparing for open cut drilling operations 1.2. Receive, interpret and clarify shift changeover details 1.3. Identify, manage and report ***potential hazards and risks*** according to work plan 1.4. Select personal protective equipment appropriate for work activities 1.5. Conduct equipment ***pre-start checks*** to ensure equipment is ready for operation 1.6. Assess ***site conditions*** and historical information of past performance to determine and clarify drilling requirements 1.7. Locate and connect ancillary services 1.8. Stabilise drill to minimise delays and breakdowns and ensure safety of operating personnel and continuous drilling 1.9. Communicate with other personnel using approved communication methods 1.10. Adhere to emergency procedures to ensure safety of personnel, plant and equipment
2. Mark out drill pattern	2.1. Erect physical barricades and signage to protect pattern from unauthorised personnel and equipment 2.2. Adjust drill pattern within authorised tolerances and drill pattern 2.3. Obtain authorisation for changes to drill pattern plan from relevant authority 2.4. Place indicators on drill pattern in preparation for hole drilling 2.5. Mark out drill pattern ensuring it is visible and aids the drilling process 2.6. Protect pre-existing drill holes according to characteristics of hole 2.7. Complete all required documentation clearly, concisely and on time
3. Move equipment and materials	3.1. Prepare rig for moving

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to pattern	3.2. Determine route and destination prior to movement of equipment and ***materials*** 3.3. Identify and manage potential hazards to ensure safe transportation to drill site 3.4. Move equipment and attachments safely and avoid damage to equipment and site or injury to personnel 3.5. Align drill rig in appropriate position to access drill pattern efficiently 3.6. Connect ancillary services

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to set-up and prepare for open cut drilling operations:

- apply legislative, organisation and site requirements and procedures
- apply diagnostic techniques
- apply blasting techniques
- make decisions
- direct operations
- apply drilling techniques
- apply driving techniques
- identify hazards
- handle hazardous goods
- interpret plans, reports, maps, specifications
- apply lifting techniques (manual, cranes and loads)
- maintain records
- organise work tasks
- report defects
- apply safe work practices
- select and fit personal protective equipment
- work in a team
- troubleshoot
- use communications equipment
- use hand tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to set-up and prepare for open cut drilling operations:

- blasting procedures
- breakdown procedures
- drilling pattern marking procedures
- drilling procedures
- emergency procedures
- environmental and heritage procedures
- equipment processes, technical capability and limitations

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- equipment safety requirements
- geological and technical data
- hauling procedures
- hazardous goods procedures and consequences of spills
- isolation procedures
- mine operational system
- night and day working procedures
- OHS procedures
- open cut procedures
- operational procedures and checks
- road rules
- shutdown procedures
- site procedures
- site safety requirements
- start-up procedures
- towing procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for setting-up and preparing for open cut drilling operations • implementation of requirements, procedures and techniques for the safe, effective and efficient setting-up and preparing for open cut drilling operations • working with others to set-up and prepare for open cut drilling operations that meet all of the required outcomes • consistent timely completion of setting-up and preparing for open cut drilling operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to set-up and prepare for open cut drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Potential hazards and risks may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground • unstable faces • vehicles
Pre-start checks may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • display instrumentation and gauges (indicators, gauges, laser levels), computer systems • engine and stop engine lights (orange and red) • fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • visual and audio warning devices and lights

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Site conditions may include:	• wet and dry • day and night • broken ground • stable ground (compaction) amount of scale • slope of working surface • degree of compaction • location of water table • working over old underground workings and voids
Materials may include:	• gravel • ore • oxidised waste • rejects • road base • rubbish • sand • sulphide rock fill • tailings • topsoil • water

Unit Sector(s)

Blast Hole Drilling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBHD305 Conduct down-hole hammer drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of down-hole hammer drilling and blast hole drilling in the drilling industry. It includes planning and preparing for down-hole hammer drilling, operating down-hole hammer drilling, using drilling fluids, maintaining equipment, and responding to problems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling
- Metalliferous mining
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not applicable.

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Elements and Performance Criteria

1. Plan and prepare for down-hole hammer drilling	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Obtain, confirm and apply ***work instructions*** for the allocated task 1.3 Identify, manage and report all potential ***hazards* and risks** 1.4 Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5 Select ***tools and equipment*** to carry out tasks consistent with ***driller's duties*** and the requirements of the job, check for serviceability and rectify or report any faults 1.6 Check ***restraining devices*** on all pressure hoses 1.7 Fit/replace restraining devices on pressure hoses as required 1.8 Raise alarm/report as required
1. 2. Operate down hole hammer drill	2.1 Select appropriate rod type, thread form and drill string components for job 2.2 Measure and select appropriate bit for the job 2.3 Collar hole 2.4 Use rod handling equipment safely and correctly 2.5 Add/break out and remove drill rods/pipes and down hole equipment 2.6 Weight/feed/rotate drill at right rate for optimum penetration 2.7 Adjust air pressure to achieve required hole clearance 2.8 Measure line string and calculate depth of hole
1. 3. Use drilling fluids	3.1 Identify hole conditions requiring the use of dust control ***fluids*** 3.2 Select suitable ingredients/fluids 3.3 Prepare/monitor the preparation of required fluids 3.4 Use dust control fluids to achieve required result
1. 4. Maintain equipment	4.1 Monitor wear 4.2 Check all equipment and hoses 4.3 Disassemble, inspect and reassemble down hole hammers 4.4 Replace/adjust and report damaged/worn parts as required 4.5 Undertake bit sharpening as required
1. 5. Respond to problems	5.1 Monitor operation and chips/***sample***/air return 5.2 Identify possible problems in equipment or process 5.3 Clear blockages 5.4 Determine other problems and ***maintenance tasks*** needing action 5.5 Determine possible fault causes 5.6 Rectify problem using appropriate solution within area of

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	responsibility 5.7 Follow through items initiated until final resolution has occurred 5.8 Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct down-hole hammer drilling:

- apply legislative, organisation and site requirements and procedures for conducting down-hole hammer drilling
- identify various thread types on the equipment at site and the application of prescribed torque
- identify worn drill pipe and damaged threads
- identify and measure various bits in use
- correctly use the various rod/pipe handling equipment on site
- correctly and competently add/remove rods/pipe from the string
- correctly apply rotation speed and weight on the bit to maintain optimum performance
- correctly measure line string components and calculate hole depth
- utilise the correct combination of air volume and pressure to maintain productivity and sample integrity
- collar holes
- ensure that samples are correctly collected and handled
- ensure that all string components are correctly maintained
- correctly measure bits and related components to ensure compatibility
- ensure that bit sharpening equipment, used to sharpen TC bits are used correctly and safely and that bits are sharpened to correct tolerances
- correctly select various bit types for differing ground conditions
- disassemble describing the function of components, inspect components, replace unserviceable parts and reassemble a DTH hammer
- use prescribed techniques to safely clear sample delivery hose blockages
- monitor sample quality and correctly interpret changes
- accept responsibility for the correct installation and maintenance of restraining devices to pressure and sample delivery hoses
- communicate the hazards of cuttings in the return air stream to all crew members
- ensure that drill pipe is inspected regularly and wear rates monitored
- ensure that threads are inspected and maintained as required

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Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct down-hole hammer drilling: • critical need to match like threads with like threads on all tubular components and make up torque requirements • parameters relating to wear of drill pipe and integrity of threads • function of hole collaring • methods required to limit the contamination of samples • theory behind TC bit sharpening • bit selection for different types of drilling and different ground conditions • problems related to inaccurate measurement of bits and other related components • importance of monitoring sample quantity • role that blockages play in affecting sample quality • methods commonly used to clear down hole blockages in air drilled holes and the hazards associated with clearing blockages • methods used to clear a blockage in a sample delivery hose and the hazards associated with clearing blockages • critical need for restraining devices to be fitted to all pressure delivery hoses and sample delivery hoses, the devices available and their methods of attachment • dangers of drilled samples being returned to the surface at high velocity in air drilling operations and the parameters involved • importance of checking gauges and monitoring pressures, flow rates and temperatures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for down-hole hammer drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient

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	completion of down-hole hammer drilling • working with others to undertake and complete the conduct of down-hole hammer drilling that meets all of the required outcomes • consistent timely completion of down-hole hammer drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement,

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	procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the conduct of down-hole hammer drilling
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig • injuries to fingers, hands and back • incorrect speed of operation • inadequate maintenance • heat, dust, fatigue, dehydration

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	• high pressure air discharge • leakage of couplings • flailing components • flailing couplings • fire • rock fall • void ground
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Tools and equipment may include:	• drill rods and drill pipe including: • conventional drill pipe • API threads • BECO threads • thread protectors • drill bits including: • DTH hammer concave, convex and flat face bits • rod handling equipment: • manual handling • mechanised rod handlers • hydraulic pipe/rod/clamps • hydraulic pipe/rod/spinner • make and break: • stillsons • hydraulic tongs • pipe wrenches • pipe/rod spinners • hydraulic make/break devices • make up torque requirements • bit break out plates
Driller's duties may include:	• using correct rod to hole diameters • selecting best bit configuration for ground and hole conditions • maintaining correct rotation speed and weight on bit for optimum penetration • calculating line string and hole depth • using correct combination of air volume and pressure to suit drilling conditions • monitoring collection, splitting and bagging of samples • ensuring all equipment is kept clean and stored

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	correctly • ensuring principles of good housekeeping are followed • measuring bit diameters
Restraining devices may include:	• internal/external whip checks • full ‘sock’ whip checks • anchor points • hose fittings
Fluids may include:	• dust control additives • water
Sample and sampling tasks may include:	• air core samples • DTH samples
Maintenance tasks may include:	• sharpening button bits, cross bits • using grinders, bit sharpening machines • line string components (e.g. drill rods, subs, stabilisers, couplings, air swivels) • drill bits

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Unit Sector(s)

Blast Hole Drilling

Custom Content Section

Not applicable.

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RIIBHD401A Supervise blast hole drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of blast hole drilling operations in resources and infrastructure industries. This includes: planning and preparing operations; initiating operations; and monitoring, adjusting, communicating and reporting on the execution of the operations.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for blast hole drilling operations	1.1. Access, clarify and ensure the application of the ***requirements and procedures*** relevant to undertaking ***blast hole drillingoperations*** 1.2. Access, clarify and ensure the application of the specific ***task information*** and ***required outcomes*** relevant to undertaking blast hole drilling operations 1.3. Prepare an ***operational plan*** which makes best use of the available ***resources*** and for the safe effective and efficient conduct of the operations
2. Initiate blast hole drilling operations	2.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the operations 2.2. Issue clear and timely ***instructions*** to ***team members*** and others involved, for the safe, effective and efficient conduct of the operations
3. Monitor, adjust, communicate and report on the execution of blast hole drilling operations	3.1. ***Monitor*** the execution of blast hole drilling operations 3.2. ***Initiate*** adjustments to ***blast hole drilling operationspractice*** or the operational plan to ensure safe, effective and efficient execution of the operations 3.3. Provide advice to ***team members*** to overcome ***operational problems*** encountered during the execution of blast hole drilling operations 3.4. Ensure plant equipment and tools maintenance requirements are carried out and recorded 3.5. Ensure reports are completed and submitted 3.6. Recommend changes to improve the safety, efficiency and effectiveness of the execution of blast hole drilling operations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. This includes the ability to carry out the following:

- interpreting legislative requirements and procedures
- interpreting organisational requirements and procedures
- interpreting client requirements and procedures
- interpreting manufacturer's requirements and procedures
- interpreting blast hole drilling operations project site geological data
- interpreting blast hole drilling operations project site geotechnical data
- interpreting blast hole drilling operations project site hydrological data
- interpreting blast hole drilling operations project site metrological data
- interpreting blast hole drilling operations project engineering survey information
- interpreting blast hole drilling operations project plans and drawings
- interpreting blast hole drilling operations project specifications
- preparing for and conducting of briefings, toolbox and site meeting
- preparing of short messages
- preparing and presenting of job reports
- preparing and maintaining of log books and diaries
- providing leadership
- applying blast hole drilling operations performance monitoring skills
- applying blast hole drilling operations trouble shooting skills
- applying blast hole drilling operations problem solving skills
- performing calculations for the execution of blast hole drilling operations
- providing recommendations for the improvement of the safe, effective and efficient execution of blast hole drilling operations

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. Assessment requires evidence of the ability to identify and explain the purpose of:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational safety and health requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures

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- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- blast hole drilling operations plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of blast hole drilling operations
- potential operational problems in the execution of blast hole drilling operations
- blast hole drilling operations resource requirements and procedures
- activities scheduling requirements and procedures
- blast hole drilling operations materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of resources and infrastructure activities and blast hole drilling operations
- team leadership techniques
- works planning techniques
- blast hole drilling operations monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the Performance Criteria, Required Skills and Knowledge and the Range Statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions that are to apply in undertaking blast hole drilling operations • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of blast hole drilling operations • working with others to plan, prepare and execute blast hole drilling operations • operational plans which reflect the requirements of these blast hole drilling operations and are capable of achieving all of their required outcomes • resource plans which have made available adequate resources for the safe, effective and efficient execution of blast hole drilling operations • provision of clear and timely instruction, advice and supervision by the individual of those involved in the undertaking of these blast hole drilling operations • evidence of the consistent successful completion of blast hole drilling operations under their supervision
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of blast hole drilling operations
	  • operational plans which reflect the requirements of blast hole drilling operations and are capable of achieving all of their required outcomes
	  • resource plans which have made available adequate resources for the safe, effective and efficient execution of blast hole drilling operations

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	• consistent successful completion of blast hole drilling operations under their supervision • first hand testimonial evidence of the candidate's: • working with others to plan, prepare and execute blast hole drilling operations • supervising and providing clear and timely instruction and advice to those involved in the undertaking blast hole drilling operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Requirements and procedures may include:	• legislative • organisational • client • site • manufacturer's ***and may include***: • risk assessment and management requirements and procedures • statutory compliance requirements and procedures • occupational safety and health requirements and procedures • environmental management requirements and procedures • cultural and heritage requirements and procedures • traffic management requirements and procedures • quality requirements and procedures • communication requirements and procedures • procurement requirements and procedures • workplace relations requirements and procedures • contract management requirements and procedures • administration requirements and procedures, including records and reporting • maintenance, servicing, and housekeeping requirements and procedures
Blast hole drilling methods may include:	• air drilling • down-hole hammer drilling • top-hole hammer drilling
Task information may include:	• site geological data • site geotechnical data • site hydrological data

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	• site meteorological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related • coordination, timing and budgeting requirements
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall operation cost requirements • waste management requirements
Operational plan may include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • operation monitoring requirements • operation performance monitoring requirements • communication requirements • reporting requirements
Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials

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	• sub-contractor services
Instructions may include	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisations management team • members of the team directly involved in the operation • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related operations
Monitor may include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Initiate may include:	• written communication • oral communications
Blast hole drilling operations may include:	• identification of and responding to operational problems • equipment maintenance
Operational problems may include:	• keeping hole open to install explosives • equipment failure • drill string bogging • drill rods breaking • controlling drill hole direction • drilling in fractured ground

Unit Sector(s)

Blast Hole Drilling

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIBHD501A Manage blast hole drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers managing blast hole drilling operations in resources and infrastructure industries. It includes preparation for, planning for and the implementation, monitoring and adjusting of blast hole drilling operations.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for blast hole drilling operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to managing blast hole drilling operations 1.2. Confirm the ***geological****and****survey data*** relevant to the planning and implementation of blast hole drilling operations 1.3. Access, interpret and clarify ***the blast design parameters*** relevant to the planning and implementation of the blast hole drilling operations
2. Plan the blast hole drilling program	2.1. Involve ***internal and external stakeholders*** in the planning process in a way that uses their contribution effectively and gains their support for the outcomes 2.2. ***Select and identify source of the equipment*** to be used for the safe, effective and efficient implementation of the blast hole drilling program 2.3. Develop and document the blast hole drilling program in accordance with the blast design parameters, the confirmed geological and survey data and relevant requirements and procedures 2.4. Identify and acquire the ***resource*** required for the implementation of the blast hole drilling 2.5. Identify and arrange any ***training*** required for personnel involved in the pit operations 2.6. Prepare and present the blast hole drilling program budget in accordance with requirements
3. Implement, monitor and adjust the blast hole drilling program	3.1. Issue and explain the blast hole drilling program to team members and others involved, for the safe, effective and efficient implementation of the program 3.2. Provide timely ongoing support and advise to those implementing the blast hole drilling program 3.3. Ensure that the blast pattern is correctly marked out in accordance with the blast design

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	3.4. Ensure records and reports are maintained and issued in accordance with the pit development requirements and other relevant requirements 3.5. Monitor the blast hole drilling program and its performance against blast design parameters, the budget and other relevant requirements 3.6. Resolve anomalies in consultation with relevant stakeholders and issue appropriate instructions for adjustments to the plan and/or its implementation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to manage blast hole drilling operations:

- apply legislative, organisation and site requirements and procedures
- interpret and apply legislative and organisational requirements
- interpret and apply geological and survey data
- provide team leadership
- manage people and processes
- resolve conflict
- coordinate human, financial and physical resources
- choose appropriate operational techniques
- choose and assign appropriate plant and equipment
- develop, initiate and administer work plans
- interpret and apply operational performance data
- monitor and maintain drilling operations
- prepare operating budgets and forecast trends
- manage projects and tasks
- deliver and maintain products and services to required specifications
- manage drilling traffic
- evaluate new and used equipment using appropriate techniques
- control operating costs
- performance auditing of finance, energy, safety, environment, quality assurance, human resources, legislative compliance and benchmarking
- gain statutory/legal approvals
- prepare tender specifications
- negotiate and finalise contracts
- access and use appropriate technologies
- prepare and present management reports
- negotiate with internal/external customers, community and statutory/legal authorities
- read, analyse and update plans

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to manage blast hole drilling

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operations:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- geological data
- survey data
- blasting parameters
- pit development options and procedures
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- team leadership techniques
- consultative and coaching techniques
- work monitoring methods
- recording and reporting systems
- drilling operations
- drilling products and services
- drilling plant and equipment
- team management
- organisational objectives
- resource monitoring
- surveying
- financial models
- fundamentals of contract law
- human resource management
- industrial awards/enterprise agreements
- planning processes
- risk management: principles, strategies and applications
- customer/client relations
- environmental management
- OHS
- computer applications
- negotiation techniques
- plan presentation

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the managing of blast hole drilling operations • implementation of procedures and techniques for the safe, effective and efficient management of blast hole drilling operations • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of blast hole drilling options that best meet the required outcomes • working with others to undertake and complete blast hole drilling operations • consistent successful blast hole drilling operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the management of blast hole drilling operations
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of blast hole drilling options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete blast hole drilling operations
	  • provision of clear and timely required

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	support and advice on the conducting of blast hole drilling operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include:	• rock (or other resource) types and characteristics • faults and joints
Survey data may include:	• site and neighbouring land form • site and neighbouring boundaries and structures • site and neighbouring roads and other infrastructure • approved limits of extraction • title details
Blast hole drilling may include:	• auger • solid flight • rotary air • down hole hammer • rotary air blast • top hole hammer
Blast design parameters would be included in the blast design and may include:	• blast hole pattern (including burden and spacing and orientation) • blast hole diameters • blast hole depth • blast hole incline
Internal and external stakeholders may include:	• site and off-site employees • contractors • equipment suppliers • geologists, surveyors and/or draughtspersons

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	• regulatory authorities representatives • community representatives • site neighbours
Planning may include:	• flow-charts • Gantt charts • critical path networks

Selection and identification of the source of equipment may include:	• site geological factors
	• blasting parameters
	• production requirements
	• availability of organisation's equipment
	• availability of contractors equipment
	• evaluation of drilling methods
	• evaluation of economics and efficiency
	• comparative costs of various options, which may include:
	  • ownership costs of drilling equipment
	  • operating costs of drilling equipment
	  • consumable cost of drilling
	  • total unit costs of a drilling operation

Safety considerations may include:	• faults in mechanical, electrical, hydraulic or other equipment • hazards related to drilling (e.g. explosion, drilling into butts, misfires) • drill rod handling • power lines • chemicals • care in used rod disposal • contaminants • toxic materials and gases • heat stress • climatic exposure • human error • lack of training • poor site preparation • non-use safety gear • ground slippage and geology • noise and dust • face stability • loose fitting clothing • bull hose • voids management

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	• drilling into butts and misfires

Resources may include:	• financial
	• labour
	• materials
	• services
	• plant and
	• equipment, which may include:
	  • down-hole tools such as tri-cone, button or cross bits
	  • drill rigs:
	• drifter - hydraulic or pneumatic
	• rotary top drive
	• ancillary equipment:
	  • pumps
	  • compressors
	  • generators
	• grout mixing equipment
	• diesel engines
	• vehicles

Training may include:	• hazards and potential accidents • driller's personal safety equipment • accident investigation and reporting • location • personal behaviour • drilling operation • noise and dust • responsibility of key personnel • associated legislation and regulations

Unit Sector(s)

Blast Hole Drilling

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIBLA201A Support shotfiring operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supporting of shotfiring operations in resources and infrastructure industries. It includes planning and preparing for and supporting of blast site operations.

Application of the Unit

This unit is appropriate for those working in a operational support roles, at worksites within:

- Civil construction
- Surface coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for supporting of blast site operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the supporting of shotfiring operations 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Access, interpret and apply geological and survey data and weather conditions required to complete the allocated work 1.4. Identify, manage and report all potential ***hazards*** 1.5. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.6. Identify and ***test*** the ***explosives and accessories*** to be used for the allocated task 1.7. Recognise and respond to hazardous and emergency situations 1.8. ***Check*** blast holes
2. Provide support at the blast site	2.1. Prepare and mix explosives in accordance with shot requirements 2.2. Pick up, carry and transport explosives and accessories on the shot site in required sequence 2.3. Assist in ***securing and isolating blast area*** in accordance with instructions 2.4. Prime, load, stem and tie in the explosive in accordance with instructions 2.5. Carry out site clean up operations according to instructions 2.6. Prepare and process reports and/or records of their support activities and others as directed

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to support shotfiring operations:

- apply legislative, organisation and site requirements and procedures for supporting blast site operations
- apply hazard identification and risk management processes
- apply operational safety requirements
- read, interpret and apply technical information
- apply blast site explosives storage control requirements
- apply explosives mix and handle requirements
- apply driving requirements and procedures for explosives transport vehicles
- apply the requirements for securing and isolating blast area
- apply explosives loading, stemming and tying in procedures
- apply record keeping procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to support shotfiring operations:

- blast plan
- site security plan
- applicable legislation and reporting requirements
- site operational safety requirements
- hazardous goods handling and transport procedures
- blasting techniques and procedures
- types, physical and technical characteristics, uses and limitations of explosives
- explosive handling, transportation and storage requirements
- explosives transport vehicle driving regulations, rules and conventions
- site geological and survey data
- hazard identification and risk management processes
- site environmental requirements and constraints

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for supporting of shotfiring operations • implementation of requirements, procedures and techniques for the safe, effective and efficient supporting of shotfiring operations • working with others to undertake and complete the shotfiring operations that meet all of the required outcomes • consistent timely completion of shotfiring operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete shotfiring operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks
	• detailed responsibilities and coordination issues and requirements
	• site layout
	• essential survey data and locations
	• essential geological information
	• known information on blast holes, including:
	  • alignment and location problems
	  • obstructions or voids
	  • wet holes
	• specifications and equipment requirements
	• transport and storage issues and requirements
	• quality of finished works
	• timings for preparation
	• achievement targets
	• operational conditions
	• public relations
	• out of bounds areas
	• worksite inspection requirements
	• lighting conditions
	• plant or equipment defects
	• hazards and potential hazards
	• coordination requirements or issues
	• environmental control requirements
	• waste management requirements

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	• barricade and signage requirements

Hazards may include:	• chemical energy, including:
	  • premature explosion
	  • deterioration of explosives
	  • stored energy
	• working environment, including:
	  • weather conditions
	  • insufficient illumination
	  • NO_x gases
	  • poor road or rail conditions
	  • ground conditions
	  • fire/flames/ignition sources
	  • atmospheric contaminants
	  • dust
	  • noise
	  • lack of ventilation
	  • extraneous electricity e.g. static electricity, lightning
	• equipment and materials, including:
	  • faulty vehicle
	  • faulty equipment
	  • electricity
	  • radio frequencies and transmitters
	  • hot exhaust system
	• people, including:
	  • speeding
	  • unauthorised persons
	  • theft or unexplained loss of explosives
	• processes and procedures, including:
	  • manual handling injuries

Coordination requirements may include	• shotfirer • blasting team • explosives mixing and delivery personnel • mobile and other equipment operators • maintenance personnel • supervisors • other worksite personnel
Test may include:	• rated capacity of exploder or blasting machine • burning rate of safety fuse • resistance of detonators

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	• continuity and insulation of firing lines • serviceability
Explosives and accessories may include:	• high and low explosives • bulk or packaged explosives • permitted explosives • shaped charges • detonators • detonating cords and signal tubes and connectors • detonation mechanisms including: • bell wire and firing lines • delay mechanisms • blasting machines or mains firing equipment • exploder and circuit tester • safety fuses • binding tape • pressure loader • venturi loader • non ferrous tools (copper to remove obstructions from blast hole) • approved cord cutters
Check includes:	• hole depth or length • blockages • direction • presence of water

Securing and isolating the blast area may include:	• witches hats
	• tapes
	• signs, including:
	  • pegs
	  • flags
	• use of radios
	• ropes
	• windrow fencing
	• bund wall

Unit Sector(s)

Blasting

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA202B Support underground shotfiring operations

Modification History

Not applicable.

Unit Descriptor

This unit covers supporting underground shotfiring operations in mining industry. It includes: planning for supporting shotfiring; providing support at the blast site; and clearing the site.

Application of the Unit

This unit is appropriate for those working in operational supporting roles, within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for supporting shotfiring	1.1. Access, interpret and apply ***compliance documentation*** relevant to supporting underground shotfiring operations 1.2. Obtain, interpret and clarify ***shotfiring requirements*** in the form of shift briefings, handover details or work orders 1.3. Access, interpret and apply environmental, ***geological and survey data*** required to complete the allocated work 1.4. Identify, manage and report all potential hazards 1.5. Resolve coordination requirements with others at the site prior to commencement of, and during, the work activity
2. Provide support at the blast site	2.1. ***Establish***, ***secure*** and isolate shot site 2.2. Ensure holes are drilled to authorised pattern design, with specific reference to geology, hazards, and safety 2.3. Flush or clean and test ***drill*** holes 2.4. Apply ***explosion inhibitor*** 2.5. Identify and report any deteriorated ***explosives*** and ***accessories*** 2.6. Ensure explosives are transported in accordance with requirements and procedures 2.7. Load and stem the explosive 2.8. Recognise and respond to hazardous and emergency situations
3. Clear the site	3.1. Remove equipment and facilities not required from the shot site 3.2. Secure and muck-out the shot site following the initiation of the blast

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to support underground shotfiring operations:

- apply legislative, organisation and site requirements and procedures
- apply personal and operational safety requirements
- access, interpret and apply technical and environmental information
- interpret geological and survey data
- apply procedures for drilling to patterns
- apply procedures for cleaning and testing holes
- apply explosives and detonators handling requirements and procedures
- identify potential hazards and manage risk
- apply record maintenance requirements
- use tools required to complete task
- apply environmental compliance requirements
- identify damaged/deteriorated explosives

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to support underground shotfiring operations:

- site personnel and operational safety requirements
- legislative and site shotfiring requirements
- types and characteristics of explosives and protection measures associated
- with their use
- shotfiring techniques and procedures
- explosive handling, transportation and storage requirements
- shotfiring equipment characteristics, technical capabilities and limitations, site
- operational and maintenance procedures
- geological and survey data essential to shotfiring
- site environmental requirements and constraints related to shotfiring including blast monitoring systems
- physical and technical quality of explosives

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for supporting underground shotfiring operations • implementation of requirements, procedures and techniques for the safe, effective and efficient supporting of underground shotfiring operations • working with others to undertake and complete the underground shotfiring operations that meet all of the required outcomes • consistent timely supporting of underground shotfiring operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete underground shotfiring operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Shotfiring requirements may include:	• the nature and scope of the blasting • essential survey information • site environmental conditions • essential geological information • detailed timings for the blast preparation • detailed responsibilities • coordination requirements/issues
Geological and survey data may include:	• wet or dry holes • strength of material to be shot • strength of surrounding strata • blast pattern plan • ventilation/gas data • deputies reports • details of cracking in holes
Site establishment and security may include:	• warnings • sentries • area clearance/isolation/barricading • inspection and testing for gas • other legislative requirements • safety distances and control/responsibilities
Drilling equipment may include:	• hand borer • air tracks • hand held drilling equipment (air, hydraulic) and machine mounted drilling equipment
Explosive inhibitor may include:	• stone

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	• dust • water
Types of explosives may include:	• wet or dry • variable density • packaged free flowing • bulk • authorised explosives
Accessories may include:	• detonators • shotfiring cable • stemming equipment • crack detector • flushing wand

Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA203B Conduct mobile mixing of explosives

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting mobile mixing of explosives in resources and infrastructure industries. It includes: preparing for operations; loading and mixing explosives materials; transporting explosives to delivery point; and delivering explosives into blast hole.

Application of the Unit

This unit is appropriate for those working in operational roles, within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to mix ***explosives*** using ***mobile processing units*** 1.2. Select ***personal protective equipment*** appropriate for work activities 1.3. Inspect work area and establish, barricade and signpost loading area 1.4. Identify, address and report potential hazards and risks 1.5. Segregate ***incompatible goods*** prior to loading the mobile processing unit according to legislation and code of practice 1.6. Inspect mobile processing unit for safe loading of explosives materials 1.7. Ensure ***attachments*** comply with standards and licensing requirements 1.8. Placard mobile processing unit and attachments to show the goods carried, Hazchem identity and emergency information 1.9. Check that ***safety equipment*** is fitted and ready for use
2. Load and mix explosives materials	2.1. Calculate batch quantities for ingredients to manufacture explosive to specification, and check availability of ingredients 2.2. Wear required personal protective equipment 2.3. Ensure truck is empty of product and any identified water in storage bin removed 2.4. Apply parking brake throughout materials loading operation 2.5. Position truck and ***operate controls*** to load specified amounts of materials according to required procedures 2.6. Set timer and operate controls to mix explosive for specified time according to procedures 2.7. Load materials in a safe manner to prevent spillage or injury to personnel and observe ***emergency procedures***

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	2.8. Record the details of all materials loaded according to procedures and requirements
3. Transport explosives to delivery point	3.1. Carry out vehicle ***pre-start checks*** 3.2. Confirm and adhere to pre-planned route 3.3. Operate vehicle according to ***road conditions*** and in compliance with established mine traffic rules 3.4. Follow emergency procedures for accidents that result in a dangerous situation
4. Deliver explosives in blast hole	4.1. Select most appropriate hole discharge point and locate delivery chute over blast hole 4.2. Confirm the identity of blast hole and explosive loading requirements with ***relevant personnel*** 4.3. Regulate the discharge of explosive to the blast hole to achieve specified weight or stemming height 4.4. Complete loading hole and prepare vehicle for next blast hole 4.5. Complete records as required 4.6. Ensure area is clear and safe to move vehicle

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct mobile mixing of explosives:

- apply legislative, organisation and site requirements and procedures
- apply driving techniques in adverse conditions
- apply route planning processes
- apply hazard identification procedures
- apply hazardous goods handling procedures
- apply vehicle refuelling procedures
- apply emergency procedures
-

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct mobile mixing of explosives:

- authorities to operate an MPU
- types and properties of explosives materials
- MPU explosive materials capacity
- mixing parameters and ratios
- incompatible materials and methods of segregation
- safety and emergency procedures and equipment associated with the loading and operation of an MPU
- MPU operation
- configuration, accessories and working parts of MPUs
- MPU loading equipment and methods
- recording and reporting requirements
- transport emergency procedures
- explosives discharge methods and requirements
- placarding and signage requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for mobile mixing of explosives • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of mobile mixing of explosives • working with others to undertake and complete the mobile mixing of explosives that meets all of the required outcomes • consistent timely completion of the mobile mixing of explosives that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the mobile mixing of explosives

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Explosives is defined as:	• 'any material or mixture which, when initiated, undergoes a rapid chemical change with the development of heat and high pressure to produce an aural, visual or practical effect'
Explosives materials may include:	• ANFO • heavy ANFO • SOFTLOAD
Mobile Processing Unit (MPU) may be defined as:	• 'A vehicle mounted plant which carries its own ingredients, can manufacture or blend a Class 1 explosive and which contains it own delivery system for the explosive; or a vehicle mounted bulk explosives container which contains its own delivery system for the explosive'
Mobile Processing Units may include:	• ANFO units • emulsion units • slurry trucks • bulk emulsion explosive delivery vehicles • re-pump vehicles • pre-blended ANFO trucks
Personal protective equipment may include:	• safety helmet • safety glasses • steel toe capped boots • ear plugs/muffs • appropriately fitting protective clothing
Incompatible goods may include:	• combustible liquids • ammonium nitrate:

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	• solutions of ammonium nitrate
	• solutions of ammonium nitrate and other inorganic nitrates
	• ammonium nitrate emulsions conforming to UN 3375
	• urea/ammonium nitrate eutectics
	• ammonium nitrate emulsions and water gels which meet the requirements of a class 1.5 explosive
	• ANFO mixture:
	  • mixtures of ammonium nitrate and fuel oils
	• solid fuels including:
	  • aluminium powder
	  • polystyrene beads
	  • pulverised rubber
	  • 'premix' - solid fuels for water gels
	  • other solid fuels included in authorised explosive compositions
	• 'effect' chemicals
	• detonators and other Class 1 explosives
	• water (except where carried for cleaning and/or processing purposes)

Attachments may include:	• elevated work platform • trailer • pumps • auger • emulsion unit
Safety equipment on the MPU may include:	• emergency kit • emergency stops • rotating beacon • fire extinguishers • handrail and walkway • signage and placarding • battery isolator • fuel isolator
Operating controls may include:	• operating bin loading hatch • auger raising, lowering and slewing • discharge chutes • operating scales/operating timers
Emergency procedures may include:	• emergency stops • battery isolation

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	• fire control procedures • reporting defects and faults
Pre-start checks may include:	• fluid levels • auger/tumbler seal inspection • fire extinguishers • loading lights • signs/placards • flashing beacon
Road conditions may include:	• dust • fog • rough surface/corrugated surface • wet/slippery/boggy roads
Emergency procedures for accidents that result in a dangerous situation may include:	• notifying the emergency services of the incident as soon as possible • notifying the owner the owner or prime contractor • providing reasonable assistance to the emergency services • carrying out emergency procedures recommended in emergency information provided, including EPGs • carrying out the local emergency plan • preventing any other vehicles, dangerous goods or explosives from coming within a safe distance specified in the emergency information carried in the vehicle • warning any person in the vicinity who may be at risk • preventing or minimising the escape of any transported material and its entry into the surrounding environment
Relevant personnel may include:	• shotfirers • blast crews • contractors

Unit Sector(s)

Blasting

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA204A Store, handle and transport explosives in underground coal mines

Modification History

Not applicable.

Unit Descriptor

This unit covers the storage, handling and transport of explosives in underground coal mining. It includes planning and preparing for storage; handling and transport of explosives; accessing and managing explosives storage; preparing to transport explosives: and transporting explosives.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for storage, handling and transport of explosives	1.1. Access, interpret and apply ***compliance documentation*** relevant to the storage, handling and transport of explosives in underground coal mining 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Identify the ***explosives and accessories*** used for different applications 1.6. Classify explosives according to statutory criteria 1.7. Apply safe handling procedures and precautions
2. Access and manage explosives storage	2.1. Gain access to ***magazine*** as ***authorised person*** 2.2. Maintain compliance requirements for signage, construction, safety and security of magazines, storage limits 2.3. Receive and despatch explosives and record transfers indicating type and quantity together with identity of recipient 2.4. Segregate explosives and accessories according to type in magazines and to prevent deterioration, spoilage and spillage 2.5. Ensure rotation of explosives in magazine 2.6. Restrict access to store to authorised persons 2.7. Maintain stock records and report discrepancies 2.8. Conduct housekeeping of magazine 2.9. Complete all required documentation and reports clearly, concisely and on time 2.10. Pass on information regarding explosives stock and storage
3. Prepare to transport explosives	3.1. Receive orders and confirm authority of recipient to possess explosives

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	3.2. Select sufficient quantities of explosives and accessories according to shot plan, for safe transport 3.3. Conduct and record results of pre-start check on explosive transport vehicle and confirm presence and operability of relevant safety equipment 3.4. Carry out vehicle start-up procedures 3.5. Display and ensure legibility of relevant signs on vehicles 3.6. Load vehicle in accordance with separation and segregation requirements 3.7. Adhere to emergency procedures in case of fire and/or accident
4. Transport explosives	4.1. Communicate with other equipment operators and other persons using appropriate communication methods to advise of explosive movements 4.2. Transport explosives and accessories separately in approved and secured containers 4.3. Transport explosives and accessories to designated location using ***designated route*** 4.4. Apply secure and ***safe driving conventions*** 4.5. Check that delivery site is suited to explosives storage and that consignment is not left unattended 4.6. Implement emergency procedures to ensure safety of personnel and site 4.7. Return surplus explosives to magazine 4.8. Complete required documentation and reports promptly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to store, handle and transport explosives in underground coal mining:

- apply legislative, organisation and site requirements and procedures for the storage, handling and transport of explosives in underground coal mining
- apply procedures for preparing explosives and equipment for transport
- apply control requirements and procedures explosives magazine
- apply explosives classification and segregation requirements
- apply hazard identification processes
- apply hazardous goods handling techniques
- apply driving regulations and site procedures for explosives transport
- apply towing requirements and procedures
- apply vehicle refuelling procedures
- implement emergency procedures
- apply mathematical calculations using addition, subtraction, multiplication and division
- apply record keeping

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to store, handle and transport explosives in underground coal mining:

- shot plan
- site security plan
- handling and transporting hazardous goods requirements
- OHS requirements and procedures
- equipment safety requirements
- emergency procedures
- site operational systems, procedures and checks
- manufacturer's instructions
- types, characteristics and applications of explosives and accessories
- explosives storage regulations and procedures
- explosive transportation procedures and regulations
- explosive magazine maintenance requirements
- waste management requirements and procedures

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- equipment operational procedures, technical capability and limitations
- start-up and shutdown procedures
- isolation procedures
- labelling requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the storage, handling and transport of explosives in underground coal mining • implementation of requirements, procedures and techniques for the safe, effective and efficient storage, handling and transport of explosives in underground coal mining • working with others to undertake the storage, handling and transport of explosives in underground coal mining that meets all of the required outcomes • consistent timely completion of the storage, handling and transport of explosives in underground coal mining that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake the storage, handling and transport explosives in underground coal mining

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • achievement targets • operational conditions • obtaining of authorisations required • site layout • designated routes • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • barricade and signage requirements

Hazards may include:	• chemical energy, including:
	  • premature explosion
	  • deterioration of explosives
	  • stored energy
	• working environment, including:
	  • weather conditions
	  • insufficient illumination
	  • methane
	  • coal dust
	  • NO_x gases

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	• poor road or rail conditions • strata conditions • fire/flames/ignition sources • atmospheric contaminants • dust • noise • lack of ventilation • extraneous electricity e.g. static electricity, lightning • equipment and materials, including: • faulty vehicle • faulty equipment • electricity • radio frequencies and transmitters • hot exhaust system • people, including those: • speeding • unauthorised persons • committing theft • processes and procedures, including: • back injuries
Coordination requirements may include:	• explosives purchase and delivery personnel and suppliers • blasting team • supervisors • other mine personnel
Explosives and accessories may include:	• high explosives • packaged explosives • permitted explosives • detonators • detonation mechanisms including: • bell wire and firing lines • delay mechanisms • blasting machines or mains firing equipment • explosives tester • binding tape
Explosives are classified in accordance with the Australian Explosives Code and a competent	• class divisions • segregation • compatibility

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authority. These provide specifications for:	• transportation requirements
Magazine is:	• a specially constructed store or container which is used exclusively for keeping explosives or pyrotechnics
Authorised person is a person authorised by an appropriate senior operational manager, and may include:	• shotfirers • magazine keepers • management • supervisors • surveyors • drivers • miners • visitors • trainees or apprentices • inspectors • maintenance staff • service personnel • tradespersons
Designated route may include:	• direct route • safest route • specified route • preferred route • alternative route
Safe driving conventions may include observing:	• speed limits • driving to road conditions • mine lighting • right of way • parking on slopes • refuelling procedures • rules at intersections • towing methods • mine traffic procedures • designated roads • pre-start checks • signs on roads • no tools or other equipment carried with explosives • segregated explosives • no smoking • only authorised driver

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Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA205A Store, handle and transport explosives

Modification History

Not applicable.

Unit Descriptor

This unit covers the storage, handling and transport of explosives in resources and infrastructure industries. It includes planning and preparing for storage; handling and transport of explosives; accessing and managing explosives storage; preparing to transport explosives: and transporting explosives.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Civil construction
- Surface coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for storage, handling and transport of explosives	1.1. Access, interpret and apply ***compliance documentation*** relevant to the storage, handling and transport of explosives 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** and ensure the work area is safe 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Identify the ***explosives and accessories*** used for different applications 1.6. Classify explosives according to statutory criteria 1.7. Apply safe handling procedures and precautions
2. Access and manage explosives storage	2.1. Gain access to ***magazine*** as ***authorised person*** 2.2. Maintain compliance requirements for signage, construction, safety and security of magazines, storage limits 2.3. Receive and despatch explosives and record transfers indicating type and quantity together with identity of recipient 2.4. Segregate blasting agents and explosives according to type in magazines and to prevent deterioration, spoilage and spillage 2.5. Ensure rotation of explosives in magazine 2.6. Restrict access to store to authorised persons 2.7. Maintain stock records and report discrepancies 2.8. Conduct housekeeping of magazine 2.9. Complete all required documentation and reports clearly, concisely and on time 2.10. Pass on information regarding explosives stock and storage
3. Prepare to transport explosives	3.1. Receive orders and confirm authority of recipient to possess explosives 3.2. Select sufficient quantities of explosives

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	and associated materials according to blast plan, for safe transport 3.3. Conduct and record results of pre-start check on explosive transport vehicle and confirm presence and operability of relevant safety equipment. 3.4. Carry out vehicle start-up procedures 3.5. Display and ensure legibility of relevant signs on vehicles 3.6. Load vehicle in accordance with separation and segregation requirements 3.7. Adhere to emergency procedures in case of fire and/or accident
4. Transport explosives	4.1. Communicate with other equipment operators and other persons using appropriate communication methods to advise of explosive movements 4.2. Transport explosives and accessories separately in approved and secured containers 4.3. Transport explosives and accessories to designated location using ***designated route*** 4.4. Apply secure and ***safe driving conventions*** 4.5. Check that delivery site is suited to explosives storage and that consignment is not left unattended 4.6. Implement emergency procedures to ensure safety of personnel and site 4.7. Return surplus explosives to magazine 4.8. Complete required documentation and reports promptly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to store, handle and transport explosives:

- apply legislative, organisation and site requirements and procedures for the storage, handling and transport of explosives
- apply procedures for preparing explosives and equipment for transport
- apply control requirements and procedures explosives magazine
- apply explosives classification and segregation requirements
- apply hazard identification processes
- apply hazardous goods handling techniques
- apply driving regulations and site procedures for explosives transport
- apply towing requirements and procedures
- apply vehicle refuelling procedures
- implement emergency procedures
- apply mathematical calculations using addition, subtraction, multiplication and division
- apply record keeping

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to store, handle and transport explosives:

- blast plan
- site security plan
- handling and transporting hazardous goods requirements
- OHS requirements and procedures
- equipment safety requirements
- emergency procedures
- site operational systems, procedures and checks
- manufacturer's instructions
- types, characteristics and applications of explosives and accessories
- explosives storage regulations and procedures
- explosive transportation procedures and regulations
- explosive magazine maintenance requirements
- waste management requirements and procedures

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- equipment operational procedures, technical capability and limitations
- start-up and shutdown procedures
- isolation procedures
- labelling requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the storage, handling and transport of explosives • implementation of requirements, procedures and techniques for the safe, effective and efficient storage, handling and transport of explosives • working with others to undertake the storage, handling and transport of explosives that meets all of the required outcomes • consistent timely completion of the storage, handling and transport of explosives that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake the storage, handling and transport of explosives

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian Standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • achievement targets • operational conditions • obtaining of authorisations required • site layout • designated routes • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • barricade and signage requirements

Hazards may include:	• chemical energy, including:
	  • premature explosion
	  • deterioration of explosives
	  • stored energy
	• working environment, including:
	  • weather conditions
	  • insufficient illumination
	  • NO_x gases
	  • poor road or rail conditions
	  • ground conditions

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	• fire/flames/ignition sources • atmospheric contaminants • dust • noise • lack of ventilation • extraneous electricity e.g. static electricity, lightning • equipment and materials, including: • faulty vehicle • faulty equipment • electricity • radio frequencies and transmitters • hot exhaust system • people, including: • speeding • unauthorised persons • theft • processes and procedures, including: • manual handling injuries
Coordination requirements may include:	• explosives purchase and delivery personnel and suppliers • blasting team • supervisors • other worksite personnel
Explosives and accessories may include:	• high and low explosives • bulk or packaged explosives • permitted explosives • shaped charges • detonators • detonating cords and signal tubes and connectors • detonation mechanisms including: • bell wire and firing lines • delay mechanisms • blasting machines or mains firing equipment • explosives tester • safety fuses • binding tape • pressure loader

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	• venturi loader • non ferrous tools (copper to remove obstructions from blast hole) • approved cord cutters
Explosives are classified in accordance with the Australian Explosives Code and a competent authority. These provide specifications for:	• class divisions • segregation • compatibility • transportation requirements
Magazine is:	• a specially constructed store or container which is used exclusively for keeping explosives or pyrotechnics
Authorised person is a person authorised by an appropriate senior operational manager, and may include:	• shotfirers • magazine keepers • contractors • drillers • drivers • miners • visitors • trainees or apprentices • inspectors • maintenance staff • management • service personnel • supervisors • surveyors • tradespersons
Designated route may include:	• direct route • safest route • specified route • preferred route • alternative route
Safe driving conventions may include observing:	• speed limits • driving to road conditions • site lighting • right of way • parking on incline/decline • refuelling procedures • rules at intersections • towing methods • site traffic procedures

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	• designated roads • pre-start checks • signs on roads • no tools or other equipment carried with explosives • segregated explosives • no smoking • only authorised driver

Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA301A Conduct surface shotfiring operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of surface shotfiring operations in resources and infrastructure industries. It includes planning and preparing for surface shotfiring operations; supervising the storage and transport of explosives and accessories; preparing for charging and charge holes; conducting the blast; completing post-blast activities; and carrying out equipment maintenance.

Application of the Unit

This unit is appropriate for those working in shotfirer roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for surface shotfiring operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conducting of surface shotfiring operations 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** and ensure work area is safe 1.4. Coordinate vehicle, ***equipment*** and personnel ***support requirements*** for the work 1.5. Arrange and/or ensure ***survey of blast area*** is complete and reported to appropriate personnel and records are maintained 1.6. Access, interpret and apply ***geological data*** and weather conditions required to complete the work 1.7. Carry out ***calculations*** to enable pattern design, loading and tying in of shots 1.8. Identify and confirm the ***explosives and accessories*** required for the work
2. Supervise the store and transport explosives and accessories	2.1. Ensure explosives and accessories are safely and correctly stored in appropriate facilities 2.2. Ensure ***inventory control systems*** are accurately and correctly maintained 2.3. Ensure explosives and accessories are transported to blast area and segregate correctly 2.4. Ensure that explosives are not left unattended 2.5. Identify and ***dispose*** of any deteriorated or out of date explosives and accessories correctly
3. Prepare for charging	3.1. Identify, manage and report potential hazards and risks 3.2. ***Secure shot area*** in accordance with procedures and blast plan 3.3. Establish and communicate access routes to shot area for authorised persons and vehicle 3.4. Identify hole locations and any

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	non-conforming conditions in preparation for charging 3.5. Establish stemming stockpile and accessories on shot site
4. Charge holes	4.1. Supervise blast personnel during loading operations 4.2. Prime and charge holes in accordance with the blast plan 4.3. Ensure blast holes are charged in accordance with loading plan and identify non-conforming conditions 4.4. Ensure blast holes are stemmed in accordance with blast plan 4.5. Test equipment and accessories 4.6. Maintain records 4.7. Conduct blast monitoring
5. Conduct the blast	5.1. Carry out ***pre blasting procedures*** and establish exclusion zone 5.2. Carry out tying in, in accordance with the blast plan 5.3. Supervise all personnel within the blast area during tie-in and initiation 5.4. ***Initiate the blast*** 5.5. Carry out and record activities in accordance with the blast plan
6. Complete post blast activities	6.1. Carry out post blast inspection 6.2. Deal with ***misfires*** 6.3. Declare area safe for re-entry 6.4. Carry out ***post-blast coordination*** 6.5. Dispose of damaged, deteriorated and surplus explosives and detonators 6.6. Complete reports
7. Carry out equipment maintenance	7.1. Carry out inspection and required maintenance after shotfiring operations 7.2. Maintain maintenance records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct surface shotfiring operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- read, interpret and apply technical information
- apply operational planning skills
- apply work coordination skills
- apply mathematical calculations using addition, subtraction, multiplication and division
- apply workplace communication techniques
- apply explosives preparation and mixing procedures
- apply diagnostic techniques
- apply explosives storage, handling and transport procedures
- apply hazard identify procedures
- apply procedures for identifying non-conformities
- apply records and reports maintenance procedures
- apply environmental compliance requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct surface shotfiring operations:

- Australian standards and code of practice
- site and equipment safety procedures
- environmental requirements, including vibration, noise, dust and chemicals
- site environmental requirements and constraints
- types, physical and technical characteristics, uses and limitations of explosives and protection measures associated with their use
- site operational procedures
- planning processes
- explosive handling, transportation and storage requirements
- equipment characteristics, technical capabilities and limitations
- equipment maintenance procedures
- isolation and lock out procedures

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- analysis of site geological and survey data
- selection of appropriate explosives to meet site/ground conditions
- monitoring and review processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conducting surface shotfiring operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of surface shotfiring operations • working with others to undertake and complete surface shotfiring operations that meets all of the required outcomes • consistent timely completion of surface shotfiring operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete surface shotfiring operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturers' guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks and achievement targets
	  • site location and layout
	  • out of bounds areas
	  • operational conditions
	  • coordination requirements or issues
	  • hazards and potential hazards
	  • waste management requirements
	  • environmental control requirements worksite inspection requirements
	  • barricade and signage requirements
	  • obtaining of permits required
	  • type and quantity of explosives and accessories
	  • equipment availability and/or requirements
	  • plant or equipment defects
	  • transport arrangements and/or requirements
	  • safe storage requirements
	  • public relations requirements

Hazards may include:	• chemical energy, including:
	  • premature explosion
	  • deterioration of explosives

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	• stored energy
	• working environment, including:
	  • weather conditions
	  • insufficient illumination
	  • methane
	  • coal dust
	  • NO_x gases
	  • poor road or rail conditions
	  • strata conditions
	  • fire/flames/ignition sources
	  • atmospheric contaminants
	  • dust and fumes
	  • noise
	  • ground conditions, including hot ground
	  • lack of ventilation
	  • extraneous electricity e.g. static electricity, lightning
	• equipment and materials, including:
	  • faulty explosives
	  • misfires
	  • faulty vehicle
	  • faulty equipment
	  • broken detonation leads
	  • high voltage electricity
	  • radio frequencies and transmitters
	  • hot exhaust system
	  • high air and water pressures
	  • hydraulic oil pressure
	• people, including those:
	  • speeding
	  • unauthorised persons
	  • committing theft
	  • trespassers
	• processes and procedures, including:
	  • back injuries
	  • drilling in butts
	  • lost holes

Equipment may include:	• siren • radios • signs

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	• vehicles approved for carrying dangerous goods and explosives • explosives mixers • pumps • plugs (to seal finished holes prior to loading) • measuring tape • cutting implements • blast monitoring systems • video camera
Support requirements may include	• other equipment and their operators • vehicles • public and site notification
Survey of blast area includes:	• locate position, direction and incline of blast holes • survey reports
Geological data may include:	• rock type • structures • faults • intrusions • weathering • wet and dry holes • hot ground • reactive ground • hot and reactive ground
Calculations may include:	• depth of holes • temperatures • water problems • pattern design • types of explosive • BCM • explosives quantity • powder factor
Explosives may include:	• high explosives • low explosives • bulk and packaged explosives • deflagrating explosives • permitted explosives • wet or dry • variable density
Accessories may include:	• primers • delays

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	• down lines
	• trunk lines
	• lead-in lines
	• detonators and detonator assemblies
	• detonation mechanisms including:
	  • bell wire and firing lines
	  • delay mechanisms
	  • blasting machines or mains firing equipment
	  • explosives tester
	• binding tape
	• fuses and igniter cords
	• detonators and detonating cord
	• gas bags
	• decking
	• stemming
	• hole liner
	• blast monitoring equipment
	• firing cables/bell wire
	• exploders and testers
	• electronic firing equipment
	• specialist tools
	• initiators

Inventory control systems may include:	• types and quantities of explosives • shelf life • distribution records
Dispose of explosives may include:	• burning by the shotfirers on site • detonation in a production drill hole • detonation in a controlled manner • return to supplier or delivery or surrender to an explosives
Secure shot area may include:	• signage • windrow • bund wall • ribbon • tape • witches hats • ropes • flags or pegs • sentries • gates

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Pre-blasting procedures may include:	• warnings • sentries • area clearance
Initiating blast systems may include:	• safety fuse • detonating cord • non-electric detonator • electric detonator • electronic detonator • remote firing
Misfires may be caused by:	• faulty explosives or accessories • damaged or deteriorated explosives or accessories • improperly assembled explosives components • inappropriate or incomplete combinations of components • operator error or inexperience • inattention to detail or ignorance • environmental influences, e.g. wet weather or poor visibility

Post-blast coordination may include:	• the return of unused explosives
	• the return of other equipment
	• the withdrawing sentries
	• collection of environmental monitoring equipment
	• recording of environmental monitoring data
	• maintenance, which may include:
	  • testing of exploders
	  • servicing of mixing equipment
	  • maintenance of hand tools
	• operational maintenance of bulk delivery equipment

Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIBLA302A Conduct shotfiring operations in underground coal mines

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of shotfiring operations in underground coal mines. It includes planning and preparing for shotfiring operations; supervising the storage and transport of explosives and accessories; preparing for charging and charge holes; conducting the blast; completing post-blast activities; and carrying out equipment maintenance.

Application of the Unit

This unit is appropriate for those working in shotfirer roles, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for shotfiring operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conduct of shotfiring operations in underground coal mines 1.2. Obtain, confirm and apply ***shotfiring requirements*** 1.3. ***Inspect worksite*** and identify, manage and report all potential ***hazards*** and ensure work area is safe 1.4. Coordinate vehicle, ***equipment*** and personnel ***support requirements*** for the work 1.5. Access, interpret and apply environmental, ***geological and survey data*** required to complete the allocated work 1.6. Carry out ***calculations*** to enable pattern design, loading and tying in of shots 1.7. Complete ***pattern design***, including loading, hole spacing and depth, stemming and wiring requirements 1.8. Carry out briefings 1.9. Identify and confirm the ***explosives and accessories*** required for the work
2. Supervise the store and transport explosives and accessories	2.1. Order and receive explosives and accessories 2.2. Ensure explosives and accessories are safely and correctly stored in appropriate facilities 2.3. Ensure ***inventory control*** systems are accurately and correctly maintained 2.4. Ensure explosives and accessories are transported to blast area and segregate correctly 2.5. Ensure that explosives are not left unattended 2.6. Identify and ***dispose*** of any deteriorated or out of date explosives and accessories correctly
3. Prepare for charging	3.1. Identify, manage and report potential hazards and risks

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	3.2. ***Secure blast area*** in accordance with procedures and blast plan 3.3. Establish and communicate access routes to shot area for authorised persons and vehicle 3.4. Identify hole locations and any non-conforming conditions in preparation for charging 3.5. Set up charging equipment in accordance with site procedures 3.6. Prepare holes for charging in accordance with blast plan
4. Charge holes	4.1. Supervise blast personnel during loading operations 4.2. Prime and charge holes in accordance with the blast plan 4.3. Ensure blast holes are charged in accordance with loading plan and identify ***non-conforming conditions*** 4.4. Apply ***explosion inhibitor*** 4.5. Ensure blast holes are stemmed in accordance with blast plan 4.6. Clear the area of equipment, personnel and isolate/barricade the blast area, including warning signs 4.7. ***Test*** equipment and accessories 4.8. Maintain ***records*** 4.9. Conduct ***blast monitoring***
5. Conduct the blast	5.1. Carry out ***pre blasting procedures*** and establish exclusion zone 5.2. Carry out tying in, in accordance with the blast plan 5.3. Supervise all personnel within the blast area during tie-in and initiation 5.4. ***Initiate the blast*** 5.5. Carry out and record activities in accordance with the blast plan
6. Complete post blast activities	6.1. Carry out post blast inspection 6.2. Secure firing circuits and ***initiation*** device 6.3. Report blasting has been completed to relevant personnel 6.4. Carry out ***post-blast coordination*** and declare area safe for re-entry

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	6.5. Inspect site and deal with non-conformities including ***misfires*** 6.6. Identify and dispose of surplus, ***damaged and deteriorated explosives*** and detonators 6.7. Ensure that emergency services are advised of the disposal activities in accordance with site procedures 6.8. Complete ***reports***
7. Carry out equipment maintenance	7.1. Carry out inspection and required maintenance during and after shotfiring operations 7.2. Maintain maintenance records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct shotfiring operations in underground coal mines operations:

- apply legislative, organisation and site requirements and procedures
- apply personal safety requirements
- apply operational safety requirements
- read, interpret and apply technical and environmental information
- apply shot planning processes
- apply operational planning skills
- apply work coordination skills
- apply mathematical calculations using addition, subtraction, multiplication and division
- apply workplace communication techniques
- apply blasting preparation techniques
- apply diagnostic techniques
- apply explosives storage, handling and transport procedures
- apply damaged/deteriorated explosives disposal procedures
- apply charging equipment operating procedures
- apply hazard identify procedures
- apply procedures for identifying non-conformities
- apply records and reports maintenance procedures
- apply environmental compliance requirements
- apply procedures to drill to pattern
- apply hole cleaning and testing procedures
- apply hazards identification
- apply misfire identification procedures
- apply risk management procedures
- use relevant and specialist hand tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct shotfiring operations in underground coal mines operations:

- Australian standards and code of practice
- explosives and safety and health legislation

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- risk management including application of appropriate controls to identified risks
- site and equipment safety procedures
- personal safety procedures
- site emergency procedures
- environmental requirements and procedures, including vibration, noise, dust and chemicals
- site environmental requirements and constraints
- site geological and survey information
- types, physical and technical characteristics, uses and limitations of explosives and protection measures associated with their use
- initiation systems
- delayed blasts
- cause and management of misfires
- non-conforming conditions
- non-conformities
- explosives disposal methods
- blasting management plan requirements
- site security plan requirements
- site operational procedures
- shotfiring techniques and procedures
- planning processes
- explosive handling, transportation and storage requirements
- equipment characteristics, technical capabilities and limitations
- start-up and shutdown procedures
- equipment maintenance procedures
- isolation and lock out procedures
- analysis of site geological and survey data
- selection of appropriate explosives to meet site/ground conditions
- monitoring and review processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting shotfiring operations in underground coal mines • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of shotfiring operations in underground coal mines • working with others to undertake and complete shotfiring operations in underground coal mines that meet all of the required outcomes • consistent timely completion of shotfiring operations in underground coal mines that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete shotfiring operations in underground coal mines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Shotfiring requirements may shift briefings, handover details or work orders include:	• nature and scope of tasks and achievement targets • site location and layout • location and direction of blast holes • essential geological information • essential survey information • site environmental conditions • detailed timings for the blast • detailed responsibilities • coordination requirements/issues • identification of areas of influence • sleeping charges • equipment required • security measures and procedures • monitoring requirements • type and quantity of explosives and • wet or dry holes • stemming material • type and quantity of explosives and accessories • initiation methods • out of bounds areas • operational conditions • coordination requirements or issues • hazards and potential hazards • waste management requirements • environmental control requirements worksite

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	inspection requirements • barricade and signage requirements • obtaining of permits required • equipment availability and/or requirements • plant or equipment defects • transport arrangements and/or requirements • safe storage requirements • public relations requirements
Site inspections may include:	• positioning stemming • cleaning up • weather check • fencing/signage and access routes • marking/hole identification • inspection • measuring holes • dewatering holes

Hazards may include:	• chemical energy, including:
	  • premature explosion
	  • deterioration of explosives
	  • stored energy
	• working environment, including:
	  • rock stability and ventilation
	  • weather conditions
	  • insufficient illumination
	  • methane
	  • coal dust
	  • NO_x gases
	  • poor road or rail conditions
	  • strata conditions
	  • fire/flames/ignition sources
	  • atmospheric contaminants
	  • dust and fumes
	  • noise
	  • ground conditions, including:
	• hot ground
	• scaling
	  • lack of ventilation
	  • extraneous electricity e.g. static electricity, lightning
	• tipping hazards

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	• debris
	  • air blast and fly
	  • lost holes
	  • radioactivity
	  • water
	• equipment and materials, including:
	  • faulty explosives
	  • misfires
	  • drilling into misfires
	  • premature explosion
	  • faulty vehicle
	  • faulty equipment
	  • broken detonation leads
	  • high voltage electricity
	  • radio frequencies and transmitters
	  • hot exhaust system
	  • high air and water pressures
	  • hydraulic oil pressure
	• people, including:
	  • speeding
	  • unauthorised persons
	  • theft
	  • trespassers
	• processes and procedures, including:
	• back injuries
	• drilling in butts
	• lost holes

Equipment may include:	• siren • radios • signs • vehicles approved for carrying dangerous goods and explosives • explosives mixers • pumps • plugs (to seal finished holes prior to loading) • measuring tape • cutting implements • blast monitoring systems • video camera
Support requirements may	• other equipment and their operators

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include	• vehicles • public and site notification
Geological and survey data may include:	• wet or dry holes • strength of material to be shot • strength of surrounding strata • blast pattern plan • ventilation/gas data • deputies reports • details of cracking in holes.
Survey of blast area includes:	• locate position, direction and incline of blast holes • survey reports
Geological data may include:	• rock type • structures • faults • intrusions • weathering • wet and dry holes • hot ground • reactive ground • hot and reactive ground
Calculations may include:	• measurement of depth of holes, temperature of holes, distances, spacings • burdens, resistances, and other relevant blasting parameters • addition, subtraction, multiplication, division • determinations of areas and volumes • calculations of delay timings in pattern designs • density of explosives • weight of explosives per hole • maximum delay of the shot • Maximum Instantaneous Charge (MIC) • stemming requirements • estimation and/or calculation of resistance of circuits, powder factors, hole • loadings, exclusion zones, and other relevant factors
Pattern design may include:	• loading and wiring requirements • reference to and consideration of geology, hazards • safety distances and margins • environmental licence conditions

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	• gas content of seam • strength of surrounding strata • other legislative requirements
Explosives may include:	• high explosives • low explosives • bulk and packaged free flowing explosives • deflagrating explosives • permitted explosives • wet or dry • variable density
Accessories may include:	• primers • delays • down lines • trunk lines • lead-in lines • detonators and detonator assemblies • detonation mechanisms including: • bell wire and firing lines • delay mechanisms • blasting machines or mains firing equipment • explosives tester • binding tape • fuses and igniter cords • detonators and detonating cord • gas bags • decking • stemming • stemming equipment • crack detector • flushing wand • hole liner • blast monitoring equipment • firing cables / bell wire • exploders and testers • electronic firing equipment • specialist tools • initiators
Inventory control systems may include:	• types of explosives • quantities of explosives • shelf life • distribution records and detail

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	• reconciliation reports
Dispose of explosives may include:	• burning by the shotfirers on site • detonation in a production drill hole • detonation in a controlled manner • return to supplier or delivery or surrender to an Explosives Inspector for destruction
Secure blast area sometimes referred to as 'exclusion zones', may be marked or delineated by one or more of the following:	• signage • windrow • bund wall • ribbon • tape • witches hats • ropes • flags or pegs • sentries • gates
Non-conforming conditions may include:	• misfires • blockages • break through • deviation • undercut • ground conditions • ventilation • water/wet holes • hot ground
Explosion inhibitors may include:	• stone dust
Testing includes	• the use of approved testing equipment
Records and reports may include:	• explosive transportation • records of consumption and disposal of explosives • magazine records • blast designs • blast plans • blast monitoring • incident reports
Blast monitoring systems may include:	• vibration monitors • noise monitors • gas detection • visibility

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	• strata movement.
Pre-blasting procedures may include:	• warnings • sentries • area clearance/isolation/barricading • inspection and testing for gas • other legislative requirements • safety distances and control/responsibilities
Blast initiation systems may include:	• safety fuse • detonating cord • non-electric detonator • electric detonator • electronic detonator • remote firing
Misfires may be caused by:	• faulty explosives or accessories • damaged or deteriorated explosives or accessories • improperly assembled explosives components • inappropriate or incomplete combinations of components • operator error or inexperience • inattention to detail or ignorance • environmental influences, e.g. wet weather or poor visibility

Post-blast coordination may include:	• the return of unused explosives
	• the return of other equipment
	• the withdrawing sentries
	• removal of signs
	• turning off safety devices
	• ventilation of area
	• clearance of noxious gases
	• collection of environmental monitoring equipment
	• recording of environmental monitoring data
	• maintenance may include:
	  • testing of exploders
	  • servicing of mixing equipment
	  • maintenance of hand tools
	  • operational maintenance of bulk delivery equipment

Damaged and deteriorated explosives may be identified by:	• exudation • efflorescence

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	• sweating • liquefaction • hardening • softening • discolouration • crystallisation • staining • damage to wrappers and carcasses • damage to containers • physical wear and tear • kinking • abrasions and cuts • crushing • loss of identification labels and markings • exposure to the elements

Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA303A Conduct underground development shotfiring

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of underground development shotfiring operations in the metalliferous mining industry. It includes planning and preparing for shotfiring operations; supervising the storage and transport of explosives and accessories; preparing for charging and charge holes; conducting the blast; completing post-blast activities; and carrying out equipment maintenance.

Application of the Unit

This unit is appropriate for those working in shotfirer roles, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for shotfiring operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to underground development shotfiring 1.2. Obtain, confirm and apply Blasting Management Plan and ***blast plan requirements*** for the shotfiring activity 1.3. ***Inspect worksite*** and identify, manage and report all potential ***hazards*** and ensure work area is safe 1.4. Coordinate vehicle, ***equipment*** and personnel ***support requirements*** for the work 1.5. Arrange and/or ensure ***survey of blast area*** is complete and reported to appropriate personnel and records are maintained 1.6. Access, interpret and apply ***geological data*** required to complete the work 1.7. Carry out ***calculations*** to enable pattern design, loading and tying in of shots 1.8. Identify and confirm the ***explosives and accessories*** required for the work
2. Supervise the store and transport explosives and accessories	2.1. Ensure explosives and accessories are safely and correctly stored in appropriate facilities 2.2. Ensure ***inventory control*** systems are accurately and correctly maintained 2.3. Ensure explosives and accessories are transported to blast area and segregate correctly 2.4. Ensure that explosives are not left unattended 2.5. Identify and ***dispose*** of any deteriorated or out of date explosives and accessories correctly
3. Prepare for charging	3.1. Identify, manage and report potential hazards and risks 3.2. ***Secure blast area*** in accordance with procedures and blast plan 3.3. Establish and communicate access routes to shot area for authorised persons and vehicle

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	3.4. Identify hole locations and any non-conforming conditions in preparation for charging 3.5. Set up charging equipment in accordance with site procedures 3.6. Prepare holes for charging in accordance with blast plan
4. Charge holes	4.1. Supervise blast personnel during loading operations 4.2. Prime and charge holes in accordance with the blast plan 4.3. Ensure blast holes are charged in accordance with loading plan and identify ***non-conforming conditions*** 4.4. Ensure blast holes are stemmed in accordance with blast plan 4.5. Clear the area of equipment, personnel and isolate/barricade the blast area, including warning signs 4.6. Test equipment and accessories 4.7. Maintain records 4.8. Conduct blast monitoring
5. Conduct the blast	5.1. Carry out ***pre blasting procedures*** and establish exclusion zone 5.2. Carry out tying in, in accordance with the blast plan 5.3. Supervise all personnel within the blast area during tie-in and initiation 5.4. ***Initiate the blast*** 5.5. Carry out and record activities in accordance with the blast plan
6. Complete post blast activities	6.1. Carry out post blast inspection 6.2. Secure firing circuits and ***initiation*** device 6.3. Report blasting has been completed to relevant personnel 6.4. Carry out ***post-blast coordination*** and declare area safe for re-entry 6.5. Inspect site and deal with non-conformities including ***misfires*** 6.6. Identify and dispose of surplus, ***damaged and deteriorated explosives*** and detonators 6.7. Ensure that emergency services are advised

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	of the disposal activities in accordance with site procedures 6.8. Complete reports
7. Carry out equipment maintenance	7.1. Carry out inspection and required maintenance during and after shotfiring operations 7.2. Maintain maintenance records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct underground development shotfiring operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- read, interpret and apply technical information
- apply operational planning skills
- apply work coordination skills
- apply mathematical calculations using addition, subtraction, multiplication and division
- apply workplace communication techniques
- apply blasting preparation techniques
- apply diagnostic techniques
- apply explosives storage, handling and transport procedures
- apply charging equipment operating procedures
- apply hazard identify procedures
- apply procedures for identifying non-conformities
- apply records and reports maintenance procedures
- apply environmental compliance requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct underground development shotfiring operations:

- Australian standards and code of practice
- explosives and safety and health legislation
- risk management including application of appropriate controls to identified risks
- site and equipment safety procedures
- site emergency procedures
- environmental requirements and procedures, including vibration, noise, dust and chemicals
- site environmental requirements and constraints
- site geological information
- types, physical and technical characteristics, uses and limitations of explosives and protection measures associated with their use

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- initiation systems
- delayed blasts
- cause and management of misfires
- non-conforming conditions
- non-conformities
- explosives disposal methods
- blasting management plan requirements
- site security plan requirements
- site operational procedures
- site underground shotfiring procedures
- planning processes
- explosive handling, transportation and storage requirements
- equipment characteristics, technical capabilities and limitations
- start-up and shutdown procedures
- equipment maintenance procedures
- isolation and lock out procedures
- analysis of site geological and survey data
- selection of appropriate explosives to meet site/ground conditions
- monitoring and review processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting underground development shotfiring operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of underground development shotfiring operations • working with others to undertake and complete underground development shotfiring operations that meet all of the required outcomes • consistent timely completion of underground development shotfiring operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete underground development shotfiring operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Blast plan requirements may include:	• nature and scope of tasks and achievement targets • site location and layout • location and direction of blast holes • sleeping charges • equipment required • security measures and procedures • monitoring requirements • type and quantity of explosives and • wet or dry holes • stemming material • type and quantity of explosives and accessories • initiation methods • out of bounds areas • operational conditions • coordination requirements or issues • hazards and potential hazards • waste management requirements • environmental control requirements worksite inspection requirements • barricade and signage requirements • obtaining of permits required • equipment availability and/or requirements • plant or equipment defects • transport arrangements and/or requirements • safe storage requirements

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	• public relations requirements
Site inspections may include:	• positioning stemming • cleaning up • weather check • fencing/signage and access routes • marking/hole identification • inspection • measuring holes • dewatering holes

Hazards may include:	• chemical energy, including:
	  • premature explosion
	  • deterioration of explosives
	  • stored energy
	• working environment, including:
	  • rock stability and ventilation
	  • weather conditions
	  • insufficient illumination
	  • methane
	  • coal dust
	  • NO_x gases
	  • poor road or rail conditions
	  • strata conditions
	  • fire/flames/ignition sources
	  • atmospheric contaminants
	  • dust and fumes
	  • noise
	  • ground conditions, including:
	• hot ground
	• scaling
	  • lack of ventilation
	  • extraneous electricity e.g. static electricity, lightning
	  • tipping hazards
	  • debris
	  • air blast and fly
	  • lost holes
	  • radioactivity
	  • water
	• equipment and materials, including:
	  • faulty explosives

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	• misfires • drilling into misfires • premature explosion • faulty vehicle • faulty equipment • broken detonation leads • high voltage electricity • radio frequencies and transmitters • hot exhaust system • high air and water pressures • hydraulic oil pressure • people, including: • speeding • unauthorised persons • theft • trespassers • processes and procedures, including: • back injuries • drilling in butts • lost holes
Equipment may include:	• siren • radios • signs • vehicles approved for carrying dangerous goods and explosives • explosives mixers • pumps • plugs (to seal finished holes prior to loading) • measuring tape • cutting implements • blast monitoring systems • video camera
Support requirements may include	• other equipment and their operators • vehicles • public and site notification
Survey of blast area includes:	• locate position, direction and incline of blast holes • survey reports
Geological data may include:	• rock type • structures

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	• faults • intrusions • weathering • wet and dry holes • hot ground • reactive ground • hot and reactive ground
Calculations may include:	• depth of holes • temperatures • water problems • pattern design • types of explosive • BCM • explosives quantity • powder factor
Explosives may include:	• high explosives • low explosives • bulk and packaged explosives • deflagrating explosives • permitted explosives • wet or dry • variable density

Accessories may include:	• primers
	• delays
	• down lines
	• trunk lines
	• lead-in lines
	• detonators and detonator assemblies
	• detonation mechanisms including:
	  • bell wire and firing lines
	  • delay mechanisms
	  • blasting machines or mains firing equipment
	  • explosives tester
	• binding tape
	• fuses and igniter cords
	• detonators and detonating cord
	• gas bags
	• decking
	• stemming
	• hole liner

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	• blast monitoring equipment • firing cables / bell wire • exploders and testers • electronic firing equipment • specialist tools • initiators
Inventory control systems may include:	• types and quantities of explosives • shelf life • distribution records
Dispose of explosives may include:	• burning by the shotfirers on site • detonation in a production drill hole • detonation in a controlled manner • return to supplier or delivery or surrender to an Explosives Inspector for destruction
Secure blast area sometimes referred to as 'exclusion zones', may be marked or delineated by one or more of the following:	• signage • windrow • bund wall • ribbon • tape • witches hats • ropes • flags or pegs • sentries • gates
Non-conforming conditions may include:	• misfires • blockages • break through • deviation • undercut • ground conditions • ventilation • water/wet holes • hot ground
Pre-blasting procedures may include:	• warnings • sentries • area clearance
Blast initiation systems may include:	• safety fuse • detonating cord • non-electric detonator • electric detonator • electronic detonator

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	• remote firing
Misfires may be caused by:	• faulty explosives or accessories • damaged or deteriorated explosives or accessories • improperly assembled explosives components • inappropriate or incomplete combinations of components • operator error or inexperience • inattention to detail or ignorance • environmental influences, e.g. wet weather or poor visibility

Post-blast coordination may include:	• the return of unused explosives
	• the return of other equipment
	• the withdrawing sentries
	• removal of signs
	• turning off safety devices
	• ventilation of area
	• collection of environmental monitoring equipment
	• recording of environmental monitoring data
	• maintenance may include:
	  • testing of exploders
	  • servicing of mixing equipment
	  • maintenance of hand tools
	  • operational maintenance of bulk delivery equipment

Damaged and deteriorated explosives may be identified by:	• exudation • efflorescence • sweating • liquefaction • hardening • softening • discolouration • crystallisation • staining • damage to wrappers and carcasses • damage to containers • physical wear and tear • kinking • abrasions and cuts • crushing • loss of identification labels and markings

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	• exposure to the elements.

Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA304A Conduct underground production shotfiring

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of underground production shotfiring operations in the metalliferous mining industry. It includes planning and preparing for shotfiring operations; supervising the storage and transport of explosives and accessories; preparing for charging and charge holes; conducting the blast; completing post-blast activities; and carrying out equipment maintenance.

Application of the Unit

This unit is appropriate for those working in shotfirer roles, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for shotfiring operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to underground production shotfiring 1.2. Obtain, confirm and apply Blasting Management Plan and ***blast plan requirements*** for the shotfiring activity 1.3. ***Inspect worksite*** and identify, manage and report all potential ***hazards*** and ensure work area is safe 1.4. Coordinate vehicle, ***equipment*** and personnel ***support requirements*** for the work 1.5. Arrange and/or ensure ***survey of blast area*** is complete and reported to appropriate personnel and records are maintained 1.6. Access, interpret and apply ***geological data*** required to complete the work 1.7. Carry out ***calculations*** to enable pattern design, loading and tying in of shots 1.8. Identify and confirm the ***explosives and accessories*** required for the work
2. Supervise the store and transport explosives and accessories	2.1. Ensure explosives and accessories are safely and correctly stored in appropriate facilities 2.2. Ensure ***inventory control*** systems are accurately and correctly maintained 2.3. Ensure explosives and accessories are transported to blast area and segregate correctly 2.4. Ensure that explosives are not left unattended 2.5. Identify and ***dispose*** of any deteriorated or out of date explosives and accessories correctly
3. Prepare for charging	3.1. Identify, manage and report potential hazards and risks 3.2. ***Secure blast area*** in accordance with procedures and blast plan 3.3. Establish and communicate access routes to shot area for authorised persons and vehicle

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	3.4. Identify hole locations and any non-conforming conditions in preparation for charging 3.5. Set up charging equipment in accordance with site procedures 3.6. Prepare holes for charging in accordance with blast plan
4. Charge holes	4.1. Supervise blast personnel during loading operations 4.2. Prime and charge holes in accordance with the blast plan 4.3. Ensure blast holes are charged in accordance with loading plan and identify ***non-conforming conditions*** 4.4. Ensure blast holes are stemmed in accordance with blast plan 4.5. Clear the area of equipment, personnel and isolate/barricade the blast area, including warning signs 4.6. Test equipment and accessories 4.7. Maintain records 4.8. Conduct blast monitoring
5. Conduct the blast	5.1. Carry out ***pre blasting procedures*** and establish exclusion zone 5.2. Carry out tying in, in accordance with the blast plan 5.3. Supervise all personnel within the blast area during tie-in and initiation 5.4. ***Initiate the blast*** 5.5. Carry out and record activities in accordance with the blast plan
6. Complete post blast activities	6.1. Carry out post blast inspection 6.2. Secure firing circuits and ***initiation*** device 6.3. Report blasting has been completed to relevant personnel 6.4. Carry out ***post-blast coordination*** and declare area safe for re-entry 6.5. Inspect site and deal with non-conformities including ***misfires*** 6.6. Identify and dispose of surplus, ***damaged and deteriorated and explosives*** and detonators

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	6.7. Ensure that emergency services are advised of the disposal activities in accordance with site procedures 6.8. Complete reports
7. Carry out equipment maintenance	7.1. Carry out inspection and required maintenance during and after shotfiring operations 7.2. Maintain maintenance records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct underground production shotfiring operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- read, interpret and apply technical information
- apply operational planning skills
- apply work coordination skills
- apply mathematical calculations using addition, subtraction, multiplication and division
- apply workplace communication techniques
- apply blasting preparation techniques
- apply diagnostic techniques
- apply explosives storage, handling and transport procedures
- apply charging equipment operating procedures
- apply hazard identify procedures
- apply procedures for identifying non-conformities
- apply records and reports maintenance procedures
- apply environmental compliance requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct underground production shotfiring operations:

- Australian standards and code of practice
- explosives and safety and health legislation
- risk management including application of appropriate controls to identified risks
- site and equipment safety procedures
- site emergency procedures
- environmental requirements and procedures, including vibration, noise, dust and chemicals
- site environmental requirements and constraints
- site geological information
- types, physical and technical characteristics, uses and limitations of explosives and protection measures associated with their use

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- initiation systems
- delayed blasts
- cause and management of misfires
- non-conforming conditions
- non-conformities
- explosives disposal methods
- blasting management and blast plan requirements
- site security plan requirements
- site operational procedures
- site underground shotfiring procedures
- planning processes
- explosive handling, transportation and storage requirements
- equipment characteristics, technical capabilities and limitations
- start-up and shutdown procedures
- equipment maintenance procedures
- isolation and lock out procedures
- analysis of site geological and survey data
- selection of appropriate explosives to meet site/ground conditions
- monitoring and review processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting underground production shotfiring operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of underground production shotfiring operations • working with others to undertake and complete underground production shotfiring operations that meet all of the required outcomes • consistent timely completion of underground production shotfiring operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete underground production shotfiring operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Blast plan requirements may include:	• nature and scope of tasks and achievement targets • site location and layout • location and direction of blast holes • sleeping charges • equipment required • security measures and procedures • monitoring requirements • type and quantity of explosives and • wet or dry holes • stemming material • type and quantity of explosives and accessories • initiation methods • out of bounds areas • operational conditions • coordination requirements or issues • hazards and potential hazards • waste management requirements • environmental control requirements worksite inspection requirements • barricade and signage requirements • obtaining of permits required • equipment availability and/or requirements • plant or equipment defects • transport arrangements and/or requirements • safe storage requirements

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	• public relations requirements
Site inspections may include:	• positioning stemming • cleaning up • weather check • fencing/signage and access routes • marking/hole identification • inspection • measuring holes • dewatering holes

Hazards may include:	• chemical energy, including:
	  • premature explosion
	  • deterioration of explosives
	  • stored energy
	• working environment, including:
	  • rock stability and ventilation
	  • weather conditions
	  • insufficient illumination
	  • methane
	  • coal dust
	  • NO_x gases
	  • poor road or rail conditions
	  • strata conditions
	  • fire/flames/ignition sources
	  • atmospheric contaminants
	  • dust and fumes
	  • noise
	  • ground conditions, including:
	• hot ground
	• scaling
	  • lack of ventilation
	  • extraneous electricity e.g. static electricity, lightning
	  • tipping hazards
	  • debris
	  • air blast and fly
	  • lost holes
	  • radioactivity
	  • water
	• equipment and materials, including:
	  • faulty explosives

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	• misfires • drilling into misfires • premature explosion • faulty vehicle • faulty equipment • broken detonation leads • high voltage electricity • radio frequencies and transmitters • hot exhaust system • high air and water pressures • hydraulic oil pressure • people, including: • speeding • unauthorised persons • theft • trespassers • processes and procedures, including: • back injuries • drilling in butts • lost holes
Equipment may include:	• siren • radios • signs • vehicles approved for carrying dangerous goods and explosives • explosives mixers • pumps • plugs (to seal finished holes prior to loading) • measuring tape • cutting implements • blast monitoring systems • video camera
Support requirements may include	• other equipment and their operators • vehicles • public and site notification
Survey of blast area includes:	• locate position, direction and incline of blast holes • survey reports
Geological data may include:	• rock type • structures

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	• faults • intrusions • weathering • wet and dry holes • hot ground • reactive ground • hot and reactive ground
Calculations may include:	• depth of holes • temperatures • water problems • pattern design • types of explosive • BCM • explosives quantity • powder factor
Explosives may include:	• high explosives • low explosives • bulk and packaged explosives • deflagrating explosives • permitted explosives • wet or dry • variable density

Accessories may include:	• primers
	• delays
	• down lines
	• trunk lines
	• lead-in lines
	• detonators and detonator assemblies
	• detonation mechanisms including:
	  • bell wire and firing lines
	  • delay mechanisms
	  • blasting machines or mains firing equipment
	  • explosives tester
	• binding tape
	• fuses and igniter cords
	• detonators and detonating cord
	• gas bags
	• decking
	• stemming
	• hole liner

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	• blast monitoring equipment • firing cables / bell wire • exploders and testers • electronic firing equipment • specialist tools • initiators
Inventory control systems may include:	• types and quantities of explosives • shelf life • distribution records
Dispose of explosives may include:	• burning by the shotfirers on site • detonation in a production drill hole • detonation in a controlled manner • return to supplier or delivery or surrender to an Explosives Inspector for destruction
Secure blast area sometimes referred to as 'exclusion zones', may be marked or delineated by one or more of the following:	• signage • windrow • bund wall • ribbon • tape • witches hats • ropes • flags or pegs • sentries • gates
Non-conforming conditions may include:	• misfires • blockages • break through • deviation • undercut • ground conditions • ventilation • water/wet holes • hot ground
Pre-blasting procedures may include:	• warnings • sentries • area clearance
Blast initiation systems may include:	• safety fuse • detonating cord • non-electric detonator • electric detonator • electronic detonator

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	• remote firing
Misfires may be caused by:	• faulty explosives or accessories • damaged or deteriorated explosives or accessories • improperly assembled explosives components • inappropriate or incomplete combinations of components • operator error or inexperience • inattention to detail or ignorance • environmental influences, e.g. wet weather or poor visibility

Post-blast coordination may include:	• the return of unused explosives
	• the return of other equipment
	• the withdrawing sentries
	• removal of signs
	• turning off safety devices
	• ventilation of area
	• collection of environmental monitoring equipment
	• recording of environmental monitoring data
	• maintenance which may include:
	  • testing of exploders
	  • servicing of mixing equipment
	  • maintenance of hand tools
	  • operational maintenance of bulk delivery equipment

Damaged and deteriorated explosives may be identified by:	• exudation • efflorescence • sweating • liquefaction • hardening • softening • discolouration • crystallisation • staining • damage to wrappers and carcasses • damage to containers • physical wear and tear • kinking • abrasions and cuts • crushing • loss of identification labels and markings

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	• exposure to the elements.

Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA305A Conduct secondary blasting

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting secondary blasting in resources and infrastructure industries. It includes: planning and preparation; conducting blasting; and completing blasting operations.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for blasting	1.1. Access, interpret and apply ***compliance documentation*** relevant to secondary blasting 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. ***Inspect*** and assess ***site conditions*** and identify, manage and report all potential ***hazards*** and ensure work area is safe 1.4. Carry out ***calculations*** to enable pattern design, loading and tying in of shots 1.5. Identify and confirm the ***explosives and accessories*** required for the work 1.6. Access safety information in accordance with site procedures 1.7. Coordinate vehicle, ***equipment*** and personnel ***support requirements*** for the work 1.8. Use personal protective equipment appropriate for the job 1.9. Manage environmental issues 1.10. Ensure area is free of blasting fumes before entry into work area
2. Conduct blasting	2.1. Carry out ***pre blasting procedures*** and establish exclusion zone 2.2. Use appropriate explosives and/or ***techniques*** to achieve ***blast objective*** 2.3. Activate warnings and notify relevant personnel of intended blasting in accordance with site procedures 2.4. Hook up and initiate blast
3. Complete blasting operations	3.1. Carry out ***post blast coordination*** and declare area safe for re-entry 3.2. Inspect site and deal with ***non-conforming conditions*** 3.3. Inspect ***equipment*** for defects and conduct housekeeping activities 3.4. Complete reports 3.5. Pass on end of shift information to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to mobilise equipment and materials:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- read, interpret and apply technical information
- apply operational planning skills
- apply work coordination skills
- apply mathematical calculations using addition, subtraction, multiplication and division
- apply workplace communication techniques
- apply explosives preparation and mixing procedures
- apply diagnostic techniques
- apply explosives storage, handling and transport procedures
- apply hazard identify procedures
- apply procedures for identifying non-conformities
- apply record and report maintenance procedures
- apply environmental compliance requirements
- use relevant equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to mobilise equipment and materials:

- relevant legislation, Australian standards and code of practice
- site and equipment safety procedures
- environmental requirements, including vibration, noise, dust and chemicals
- site environmental requirements and constraints
- types, physical and technical characteristics, uses and limitations of explosives and protection measures associated with their use
- basic geological and technical information
- blast plans
- site operational procedures
- planning processes
- explosive handling, transportation and storage requirements

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- equipment characteristics, technical capabilities and limitations
- equipment maintenance procedures
- isolation and lock out procedures
- selection of appropriate explosives to meet site conditions
- site charging procedures
- emergency procedures
- risk management including application of appropriate controls to identified risks
- start-up and shutdown procedures
- non-conforming conditions

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting secondary blasting • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of secondary blasting • working with others to undertake and complete secondary blasting that meets all of the required outcomes • consistent timely completion of secondary blasting that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conducting of secondary blasting

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks and achievement targets • site location and layout • out of bounds areas • operational conditions • coordination requirements or issues • hazards and potential hazards • waste management requirements • environmental control requirements worksite inspection requirements • barricade and signage requirements • obtaining of permits required • type and quantity of explosives and accessories • equipment availability and/or requirements • plant or equipment defects • transport arrangements and/or requirements • safe storage requirements • public relations requirements
Site conditions may include:	• ventilation • ground conditions (e.g. scaling) • illumination • radioactivity • weather conditions • water
Hazards and associated risks may	• ground conditions

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include:	• loose rocks from overhead • tipping hazards • fire/flames • not following safety precautions near an open stope • broken detonation leads • premature explosion • atmospheric contaminants • debris • faulty equipment • air blast and fly • high air and water pressures • high voltage electricity • oxygen-deficient atmosphere • unauthorised personnel • wet holes • radio frequencies and transmitters • EMF hazards (e.g. static electricity, lightning) • hot material • lost holes • drilling in butts • drilling into misfires
Explosives may include:	• high explosives • permitted explosives • propellant charges • black powder • shaped charges • plaster charges or charges in drill holes
Explosives and associated materials may include:	• blasting agents • detonators • detonating cords • water gels or emulsions • bulk or packaged • shaped charges • permitted explosives • high explosives • propellants • pressure loaders (kettle) • detonation mechanisms including: • bell wire • delay mechanisms • initiators

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	• meter readings • safety fuses and tapes • tape • exploders • circuit testers • connecting wire and cables • crimpers • approved detonator chord cutters • stemming rods • loading poles • gas bags • decking • stemming • hole liner • blast monitoring equipment • firing cables/bell wire • remote firing equipment (e.g. PED)
Equipment may include:	• drill rig • pneumatic or electric drill/machine drill • other hand held tools • explosives and accessories • poles or rods • recommended/required PPE • ties and bagging material • sandbags • stemming • blast mats
Support requirements may include	• other equipment and their operators • vehicles • public and site notification
Environmental issues may include:	• ventilation • fume • dust
Pre-blasting procedures may include:	• warnings • sentries • area clearance
Exclusion zones may be marked or delineated by one or more of the following:	• signage • windrow • bund wall • ribbon • tape

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	• witches' hats • rope • flags or pegs • sentries • gates
Techniques may include:	• drilling • shotfiring • snake-holding • bombing • penetration cone fracture (PCF) • cannon • plastering • popping rocks with small charges
Blast objective may include:	• breaking oversize materials • unblocking
Post blast coordination may include:	• withdrawal of sentries • return of unused explosives and equipment • removal of signs • turning off safety devices • ventilation of area • use of gas detectors
Non-conforming conditions may include:	• misfires • blockages • break through • deviation • undercut • ground conditions • ventilation • water/wet holes • hot ground • fumes • dust

Unit Sector(s)

Blasting

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA306A Conduct accretion firing

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting accretion firing in the metalliferous mining industry. It includes: planning and preparing for firing; preparing the site; charging and firing the shot; and completing the process.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for firing	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting accretion firing 1.2. Receive, interpret and clarify ***accretion*** shooting details, and confirm blast objective by preliminary site inspection 1.3. Identify and manage ***potential hazards and risks*** 1.4. Apply ***basic calculations*** for accretion shooting in accordance with site procedures to validate the blast objective criteria 1.5. Identify, confirm and collect ***equipment*** required for the task 1.6. Complete permits or other required documentation
2. Prepare site	2.1. Coordinate ***support requirements*** and ***personnel*** 2.2. Install and utilise barricades or other ***safety provisions*** 2.3. Utilise appropriate personal protective 2.4. Set up/assemble tools and associated equipment 2.5. ***Establish blast pipe*** into accretion in accordance with blast objective 2.6. ***Prepare and test*** the blast pipe in readiness for ***explosives*** 2.7. Remove excess equipment to appropriate storage area
3. Charge and fire the shot	3.1. Set up exclusion zones and clear non-essential personnel from the area 3.2. Collect required quantities of appropriate explosive to carry out blast objective 3.3. Prepare the charges 3.4. Activate ***warning devices*** and notify relevant personnel of intended blast 3.5. Charge the blast pipe and hook up the firing circuit 3.6. Fire the shot 3.7. Complete required reports/documentation

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4. Complete process	4.1. Disconnect the firing circuit and secure the firing device 4.2. Declare the area safe and inspect the blast area to verify blast objective has been attained 4.3. Manage misfires 4.4. Remove safety provisions, deactivate warning devices and give clearances 4.5. Conduct housekeeping activities

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct accretion firing:

- apply legislative, organisation and site requirements and procedures
- apply workplace communication skills
- apply documentation requirements
- apply hazard identification and management requirements and procedures
- use hand tools
- perform basic calculations required to perform accretion firing tasks
- apply diagnostic techniques
- apply explosives handling and transport requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct accretion firing:

- site procedures
- explosives legislation
- emergency procedures/environmental procedures
- equipment purpose, technical capability and limitations
- equipment safety requirements
- causes of accretion/effects of accretion
- hazardous goods procedures (handling and transport)
- blast area security
- safe operating procedures and techniques
- risk management including application of appropriate controls to identified risks
- start-up and shutdown procedures
- explosives storage procedures
- types and characteristics of blasting agents, explosives and initiation systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting accretion firing • Implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of accretion firing • working with others to undertake and complete accretion firing that meets all of the required outcomes • consistent timely completion of accretion firing that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete accretion firing

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Accretion may be defined as:	• 'A solid build up of any material or substance being processed which will require blasting to dislodge it'.
Accretion may include:	• lead cooling in a furnace • build up of material inside a mill
Potential hazards and risks may include:	• heat • manual handling • tripping hazards • confined spaces • open voids/working at height • moving equipment • fire/flames • broken detonation leads • premature explosion • atmospheric contaminants • debris • faulty equipment • high air and water pressures • high voltage electricity • gases and fumes • unauthorised personnel • radio frequencies and transmitters • EMF hazards (e.g. static electricity, lightning) • hot material
Basic calculations may include:	• depth of blast pipe

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	• quantity of explosives • pipe placement • timing
Equipment may include:	• water/air hoses • jack hammer • thermal lance • shotgun • drill steels • piping • PPE • skewers • hand tools • vice • winch • exploder • bomb points • blast pipe
Support requirements may include:	• environmental monitoring • trucks, excavators, bobcats or other machinery • assistants • metallurgists • furnace/mill operators • observers • cranes/winches
Personnel may include:	• other operators • metallurgists • assistants • trainers/assessors • furnace operators • mobile equipment operators • supervisors
Safety provisions may include:	• warning whistles • signs and barricades • sentries • flashing lights • broadcasts • exclusion zones • blast shields
Establishing blast pipe may include:	• jack hammering • use of thermal lance • use of a shotgun

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Prepare and test may include:	• cooling • inserting dummy explosive prior to blasting
Explosives may include:	• high explosives • permitted explosives • detonators
Warning devices may include:	• firing whistles • flashing lights • broadcasts

Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA307A Conduct blast survey

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting blast survey in resources and infrastructure industries. It includes: planning and preparing for operations; operating the survey equipment; and carrying out basic maintenance.

Application of the Unit

This unit is appropriate for those working in operational roles, within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conduct blast survey 1.2. Interpret and apply relevant ***geological data*** required to complete the allocated task 1.3. Receive, interpret and clarify survey parameters 1.4. Carry out ***survey equipment*** checks
2. Operating surveying equipment	2.1. Set up appropriate signage 2.2. Carry out the set up and start of equipment 2.3. ***Survey*** blast area to task requirements 2.4. Prepare survey reports, report to appropriate personnel and maintain records 2.5. Complete work in accordance with the agreed plans and outcomes and within the operating capacities of the equipment 2.6. Carry out operations in accordance with quality requirements 2.7. Diagnose, rectify or report equipment faults to appropriate personnel
3. Carry out basic maintenance	3.1. Carry out inspections and fault finding 3.2. Carry out routine servicing and housekeeping 3.3. Carry out minor maintenance 3.4. Maintain records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct blast survey:

- apply legislative, organisation and site requirements and procedures
- apply survey equipment operating procedures
- apply field geometry methods
- apply equipment records requirements
- access, interpret and apply technical information
- use relevant hand tools
- apply diagnostic techniques
- apply eye/hand co-ordination
- apply hazard identification procedures
- apply computer software
- apply workplace communications
- work wearing personal protective equipment
- apply procedures for working in confined spaces
- apply procedures for working at heights
- apply using linear and angular survey measurements
- read and interpret plans
- apply plan documents updating requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct blast survey:

- site and equipment safety requirement
- equipment and characteristics, technical capabilities and limitations
- operational and maintenance procedures
- environmental requirements and procedures
- survey techniques for set up and collection of data
- linear measurement
- angular measurement
- manual and electronic means of conducting survey
- plans and maps

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting blast survey • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of blast survey • working with others to undertake and complete blast survey that meets all of the required outcomes • consistent timely completion of blast survey that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete blast survey

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include:	• rock type • structures • faults • intrusions • weathering
Survey equipment is not limited to electronic equipment and may include:	• profiler • Boretrak equipment • computer • software • tapes • "fishing" poles string lines and plumb bobs • survey markers • contour maps • bore hole log • video • inclinometer
Survey may be used to establish:	• rock type/geological formation shapes • drill angel • drill depth • face stability • hole size • pattern

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Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA401A Manage blasting operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the management of blasting operations in resources and infrastructure industries. It includes the requirements for managing: compliance with legislation; the storage, handling and transport of explosives; the implementation of blasting activities; special conditions; misfires; disposal of explosives; and the maintenance of blasting equipment.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Manage compliance with legislation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the management of blasting operations 1.2. Access, interpret and validate the blast design criteria 1.3. Identify and obtain relevant permits, licenses or authorities needed for blasting activities 1.4. Apply the legislative and site requirements and procedures for the purchase of ***explosives*** 1.5. Apply the procedures for the identification of ***potential hazards*** and the implementation and application of the site/organisation risk management system 1.6. Apply the procedures to monitor the setting up and security of explosives storage location in compliance with legislative and site requirements 1.7. Manage legislative and site blasting reporting requirements and procedures 1.8. Report any loss or theft of explosives
2. Manage the storage, handling and transport of explosives	2.1. Apply the legislative and site requirements and procedures for safe handling of explosives 2.2. Apply the legislative and site requirements, procedures and safety precautions for the transport of explosives 2.3. Apply the legislative and site requirements, procedures and safety precautions for the storage of explosives 2.4. Apply the legislative and site requirements and procedures for setting-up and maintaining secure ***explosives storage locations***
3. Manage the implementation of blasting activities	3.1. Identify ***environmental hazards*** and analyse the risks associated with blasting 3.2. Implement the ***blast plan*** 3.3. Apply the blast monitoring system in accordance with site procedures 3.4. Apply site and legislative procedures to

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	ensure that ***site inspections*** to confirm the blast plan are implemented 3.5. Confirm and manage the availability of the type and quantity of ***explosives and associated materials*** required for blasting 3.6. Manage the site procedures and legislative requirements for the coordination of support requirements including vehicles, ***personnel*** and other ***equipment*** 3.7. Apply site procedures for setting up and securing the blast area 3.8. Apply the special requirements for secondary blasting operations 3.9. Apply and manage ***post-blasting coordination*** and ***inspection*** requirements 3.10. Complete all statutory and site-required ***documents***
4. Manage special conditions	4.1. Identify potential hazards resulting from physical, biological or chemical situations which include heat, cold, climatic and electro-static condition 4.2. Control and monitor special conditions that may occur 4.3. Ensure that records and reports on special conditions are kept and maintained according to legislative and site requirements and procedures
5. Manage misfires	5.1. Apply site procedures for the re-assessment of the blast site for potential hazards and risks and ensuring work area is safe 5.2. Inspect blast area to identify ***misfires*** or potential misfires and identify cause of misfire 5.3. Secure the misfire area and communicate information to other ***personnel*** who may be affected 5.4. Apply procedures to for washing-out or re-charging, and manage refiring according to relevant legislation, standards and site procedures 5.5. Communicate the area is now safe with other persons who may have been affected by blasting 5.6. Record and report misfires according to

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	relevant legislation and site procedures
6. Manage the disposal of explosives	6.1. Identify damaged or ***deteriorated explosives*** and accessories 6.2. Select an applicable ***disposal method*** for explosives and accessories 6.3. Plan for the disposal of the damaged, deteriorated or surplus explosives 6.4. Carry out the disposal of damaged, deteriorated and surplus explosives and detonators in accordance with legislative requirements and site procedures 6.5. Communicate disposal activities to site emergency services
7. Manage maintenance of blasting equipment	7.1. Identify the equipment necessary for use in preparing, initiating or ***monitoring*** blasting operations 7.2. Monitor maintenance and conduct routine inspection of blast and blast monitoring equipment in accordance with manufacturer's requirements and site procedures 7.3. Monitor the maintenance of blast monitoring instrumentation to ensure valid calibration as specified in manufacturers' requirements and according to site procedures 7.4. Ensure that maintenance and inspection records are kept according to site, manufacturer's or legislative requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to manage blasting operations:

- apply legislative, organisation and site requirements and procedures
- apply legislative and site requirements and procedure for blasting activities
- select and use PPE
- read plans and documents
- apply electronic, radio and other means of communication
- apply blasting preparation techniques
- identify hazards/apply hazardous substances handling techniques
- perform blasting mathematical calculations
- apply diagnostic techniques
- apply inspection and monitoring procedures for:
  - storage, handling and transport of explosives
  - charging
  - blast initiation
  - post blast activities
  - environmental impact monitoring
  - equipment maintenance management
  - explosives disposal
  - records maintenance

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to manage blasting operations:

- Australian standards and codes
- blast site procedures
- explosives and safety and health legislation
- emergency procedures
- environmental procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- basic geological and technical information
- blast plans

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- hazardous goods procedures (handling and transport)
- isolation and lock out procedures
- manufacturers' instructions
- management systems
- preparation for and use of explosives
- safe operating procedures
- risk management including application of appropriate controls to identify risks
- site procedures
- transportation of explosives
- job safety analysis
- start up and shut down procedures
- explosives storage procedures
- types and characteristics of blasting agents, explosives and initiation systems
- concepts such as density, velocity and relationships between variable
- assimilation, interpretation and application of information and technical data
- mathematical processes and applications
- cause and management of misfires
- identification of safety and environmental hazards
- explosives disposal methods
- record keeping requirements and formats

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the management of blasting operations • implementation of appropriate procedures and techniques for the safe, effective and efficient management of blasting operations • working with others to plan, prepare and conduct blasting operations • provision of clear and timely instruction and supervision by the individual of those involved in blasting operations • evidence of the consistent successful management of blasting operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct blasting operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the blasting operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Explosives may include:	• high explosives (e.g. packaged and bulk high explosives) • low explosives (e.g. black powder) • deflagrating explosives (e.g. propellants used for secondary blasting) • detonators and detonator assemblies • detonating cords and accessories • fuses and igniter cords
Potential hazards may include:	• broken detonator leads • dust and fumes • faulty equipment • faulty explosives • ground conditions • high air and water pressures • high voltage electricity • hydraulic oil pressure • lost holes • misfires • trespassers • radio frequencies and transmitters • EMF hazards (e.g. static electricity, lightning) • hot ground
Storage locations may include:	• permanent licensed-to-store magazines • relocatable magazines • underground magazines

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	• underground temporary storage • day boxes • on site temporary areas • designated transport vehicle
Environmental hazards may include:	• the transmission of compression-tension elastic vibrations in both solids and gases • the generation and projection of elements, compounds and particulates from the site of explosion and related quantifiable damage • physical damage to the environment • damage to infrastructure • damage to fauna and flora • impact on human and domestic animal life and amenity • perceived and psychological-emotional disturbance • fluctuations and alterations of the hydrosphere
Blast plan requirements may include:	• location • sleeping charges • equipment required • security measures and procedures • monitoring requirements • type and quantity of explosives and initiation methods • wet or dry holes • stemming material
Site inspections may include:	• positioning stemming • cleaning up • weather check • fencing/signage and access routes • marking/hole identification • inspection • measuring holes • dewatering holes
Explosives and associated materials may include:	• blasting agents • detonators • detonating cords • water gels or emulsions • bulk or packaged • shaped charges • permitted explosives • high explosives

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	• propellants • pressure loaders (kettle) • detonation mechanisms including: • bell wire • delay mechanisms • initiators • meter readings • safety fuses and tapes • tape • exploders • circuit testers • connecting wire and cables • crimpers • approved chord cutters • stemming rods • loading poles • gas bags • decking • stemming • hole liner • blast monitoring equipment • firing cables/bell wire • remote firing equipment (e.g. PED)
Personnel may include:	• shotfirers • magazine keepers • contractors • drillers • drivers • miners • visitors • trainees/apprentices • inspectors • licensed operators • maintenance staff • management • service personnel • supervisors • surveyors • tradespersons
Equipment may include:	• vehicles approved for carrying dangerous goods and explosives • explosives mixers

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	• pumps • plugs (to seal finished holes prior to loading) • measuring tape • cutting implements • blast monitoring systems • video cameras
Post-blast coordination may include:	• withdrawal of sentries • return of unused explosives and equipment • removal of signs • turning off safety devices • ventilation of area
Site inspections may include:	• positioning stemming • cleaning up • weather check • fencing/signage and access routes • marking/hole identification • inspection • measuring holes • dewatering holes
Documents, records, and reports may include:	• records of purchase • records of carriage • records of consumption and disposal of explosives • cart notes • magazine records • blast designs • blast plans • shotfirer's reports • blast monitoring records • complaints, injury and accident reports • records of face profiling and bore tracking surveys, videotapes or photographs • records may be kept as papers, bound forms, field books, computer printouts, floppy disks, videotapes, digital recordings, specific or routine reports or logbooks
Misfires may be caused by:	• faulty explosives or accessories • damaged or deteriorated explosives or accessories • improperly assembled explosives components • inappropriate or incomplete combinations of components

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	• operator error or inexperience • inattention to detail or ignorance • environmental influences (e.g. wet weather or poor visibility)
Deteriorated explosives may show symptoms of:	• exudation • efflorescence • sweating • liquefaction • hardening • softening • discoloration • crystallisation • staining • damage to wrappers and carcasses • damage to containers • physical wear and tear • kinking • abrasions and cuts • crushing • loss of identification labels and markings • exposure to the elements
Disposal methods may include:	• burning by the shotfirers on site • detonation in a production drill hole • detonation in a controlled manner • return to supplier or delivery or surrender to an explosives inspector

Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA402A Monitor and control the effects of blasting on the environment

Modification History

Not applicable.

Unit Descriptor

This unit covers the monitoring and controlling of the effects of blasting on the environment in resources and infrastructure industries. It includes developing monitoring and control strategies, implementing monitoring systems and reviewing strategies.

Application of the Unit

This unit is appropriate for those working in operational or technical specialist roles, within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop strategies to control the effects of blasting on the environment	1.1. Access, interpret and apply ***compliance documentation*** relevant to monitoring and control of the effects of blasting on the environment 1.2. Identify and evaluate the environmental hazards and controls to minimise the impact on the environment of ground ***vibration*** resulting from blasting 1.3. Identify and evaluate the environmental hazards and controls to minimise the impact on the environment of ***flyrock*** resulting from blasting 1.4. Identify and evaluate the environmental hazards and controls to minimise the impact on the environment of ***air blast***, ***noise and overpressure*** resulting from blasting 1.5. Identify and evaluate the environmental hazards and controls to minimise the impact on the environment of ***air pollution and dust*** resulting from blasting 1.6. Identify and evaluate the environmental hazards and controls to minimise the impact on the environment of ***water pollution*** resulting from blasting 1.7. Identify and analyse the objectives and criteria for safe and effective blast monitoring 1.8. Evaluate and select ***monitoring device*** options 1.9. Prepare procedures for the installation, establishment and operation of ***monitoring*** systems 1.10. Formulate the monitoring system ***maintenance*** program and procedures 1.11. Determine procedures for the audit, review and updating of the monitoring system
2. Implement environment monitoring systems	2.1. Implement procedures for monitoring, recording and reporting on environmental controls according to statutory requirements 2.2. Implement procedures for the installation

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	and operation of monitoring systems and equipment 2.3. Implement procedures for the collection and analysis of environmental data 2.4. Process, record and report monitoring system data in accordance with site procedures and statutory requirements 2.5. Interpret measured data, compare with statutory and site requirements and implement identified actions
3. Review strategies	3.1. Audit the effectiveness of the environmental control system in order to ensure that blasting standards comply with statutory and environmental management plan requirements 3.2. Audit the effectiveness of the environmental control system in order to ensure that monitoring systems operate to statutory requirements 3.3. Audit the effectiveness of the environmental control system in order to ensure that recording systems are maintained accurately and data are processed in accordance with environmental management plan requirements 3.4. Review the monitoring system to ensure that standards remain appropriate

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to monitor and control the effects of blasting:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply safety rules and procedures
- plan and coordinate work
- assess the risks and hazards attached to explosives in the environment
- interpret the impact of blast design on ground vibration, air blast and flyrock
- interpret and apply manufacturer's instructions
- audit data and apply to blasting strategy

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to monitor and control the effects of blasting:

- legislative and statutory requirements and procedures
- sources of legislation
- differing geological features and conditions' effect on ground vibration, air blast and flyrock
- portable monitoring equipment characteristics, technical capabilities and limitations
- maintenance surveys and procedures
- audit and review processes and techniques
- procedures for estimation of ground vibration levels
- procedures for estimation of blast overpressure

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Evidence Guide

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Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the monitoring and control of the effects of blasting • implementation of procedures and techniques for the safe, effective and efficient monitoring and control of the effects of blasting • working with others to plan, prepare and conduct the monitoring and control of the effects of blasting • provision of clear and timely instruction and supervision by the individual of those involved in the monitoring and control of the effects of blasting • evidence of the consistent successful monitoring and control of the effects of blasting
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the monitoring and control of the effects of blasting
	  • provision of clear and timely instruction and supervision by the individual of those involved in the monitoring and control of the effects of blasting

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mechanisms which may contribute to ground **vibration** may include:	• peak particle velocity • vibration • frequency • damage criteria
Vibration may:	• contribute to, or result in damage to, cracking and collapse of structures
Vibration controls may include:	• vibration monitoring • establishment of vibration limit
Flyrock may result in:	• injury to people • damage to buildings and services • scatter of materials
Air blast, **noise and over pressure** may result in:	• structural and building damage • public reaction
Mechanisms which may contribute to **air blast**, **noise and over pressure** may include:	• peak values • frequency range • damage criteria
Air blast, **noise and over pressure** controls may include:	• the establishment of noise limits • overpressure limits • measurement and recording • provision and testing of monitoring equipment
Air pollution may include:	• dust • toxic gases, including: • oxides of nitrogen • carbon monoxide

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	• hydrocarbons • combination of toxic gases
Dust control measures may include:	• establishment of a dust control program • monitoring of dust • identification and responses to dust problems • selection of appropriate control measures
Design criteria for portable **monitoring devices** may include:	• battery capacity • battery recharge requirements • statutory compliance provision for: • calibration • size • weight • ease of operation • robust construction
Defects to **monitoring devices** may include:	• inferior design • deterioration of materials • inadequate quality of manufacture • physical damage • water damage
Monitoring may include:	• portable blasting seismographs • sound level meters • dust sampling tubes • video and still cameras
Maintenance may include:	• inspection • servicing • repair

Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA601A Design surface blasts

Modification History

Not applicable.

Unit Descriptor

This unit covers the designing of surface blasts in resources and infrastructure industries. It includes: identifying and documenting the design parameters; preparing the blast plans; and implementing, monitoring and adjusting blast plans.

Application of the Unit

This unit is appropriate for those working in management role or technical specialist roles, within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and document the design parameters	1.1. Access, interpret and apply ***compliance documentation*** relevant to the design and implementation of the blast plans 1.2. Identify ***potential hazards***, assess the associated risks and relevant parameters to be applied in the blast design 1.3. Confirm the ***geological and survey data*** relevant to the design and implementation of the blast 1.4. Access, interpret and clarify the ***blast requirements*** relevant to the design and implementation of the blast 1.5. Identify ***operational limitations*** relevant to the design and implementation of the blast 1.6. Identify the available ***explosives*** and their characteristics relevant to the design and implementation of the blast 1.7. Identify the available ***initiation options*** and their characteristics relevant to the design and implementation of the blast
2. Prepare the blast plan	2.1. Apply the ***blast design parameters*** to prepare a safe, effective and efficient ***blast plan*** 2.2. Ensure that the blast plan meets all of the blast requirements and parameters 2.3. Prepare and present the blast plan budget in accordance with the organisation's requirements 2.4. Document the blast plan in accordance with relevant legislative and organisation's requirements and procedures
3. Implement, monitor and adjust blast plans	3.1. Issue and explain the blast plan to team members and others involved, for the safe, effective and efficient implementation of the plan 3.2. Provide timely ongoing support and advice to those implementing the blast plan 3.3. Ensure records and reports are maintained and issued in accordance with relevant legislative and organisational requirements 3.4. Monitor the results of the blast against blast

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	design requirements and parameters and the budget 3.5. Resolve anomalies in consultation with relevant ***stakeholders*** and issue appropriate instructions for adjustments to future plans and/or their implementation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to design surface blasts:

- apply legislative, organisation and site requirements and procedures
- interpret and apply legislative and organisational requirements
- interpret and apply geological and survey data
- apply blast design procedures and calculations
- provide team leadership
- choose appropriate operational techniques
- choose and assign appropriate plant and equipment
- apply procedures for developing, initiating and administering work plans
- interpret and apply operational performance data

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to design surface blasts:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- geological data
- survey data
- range of blasting parameters
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- team leadership techniques
- consultative and coaching techniques
- work monitoring methods
- recording and reporting systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the designing of surface blasts • implementation of procedures and techniques for the safe, effective and efficient designing of surface blasts • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to undertake and complete surface blasts • consistent and timely completion of surface blast designs
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete surface blasts
	  • consistent and timely gaining of approval of surface blast designs
	  • provision of clear, timely required support and advice on the implementation of

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	surface blast designs
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Potential hazards may include:	• dust and fumes • faulty explosives • ground conditions • high air and water pressures • high voltage electricity • radio frequencies and transmitters • EMF hazards (e.g. static electricity, lightning) • hot ground • the transmission of compression-tension elastic vibrations in both solids and gases • the generation and projection of elements, compounds and particulates from the site of explosion and related quantifiable damage • physical damage to the environment • damage to infrastructure • damage to fauna and flora • impact on human and domestic animal life and amenity • perceived and psychological-emotional disturbance • fluctuations and alterations of the hydrosphere
Geological data may include:	• rock (or other material) types and characteristics • faults and joints
Survey data may include:	• site and neighbouring land form • site and neighbouring boundaries and

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	structures • site and neighbouring roads and other infrastructure • approved limits of extraction
Blast requirements may include:	• production volumes • heave • throw • fragmentation • maximum instantaneous charge • environmental constraints • development consent conditions • any site specific special requirements • worksite and/or pit plan
Operational limitations may include:	• available drilling equipment • historic data • economic
Explosives may include:	• high explosives (e.g. packaged and bulk high explosives • low explosives (e.g. black powder) • deflagrating explosives (e.g. propellants used for secondary blasting) • detonators and detonator assemblies • detonating cords and accessories • fuses and igniter cords
Initiation options may include:	• electrical • non electrical • delay detonators • electronic delays
Blast design parameters may include those required to account for:	• legislative requirements and procedures • organisation's requirements and procedures • potential hazards • geological factors • survey data • blast requirements • operational limitations • available explosives • available initiation options
Blast plan may include:	• explosives to be used • initiation system to be used • initiation sequence to be used • decking requirements

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	• stemming requirements • blast hole pattern (including burden and spacing and orientation) • blast hole diameters • blast hole depth • blast hole incline • sub-grade requirement
Stakeholders may include:	• site and off-site employees • contractors • equipment suppliers • geologists, surveyors and/or draughtspersons • regulatory authorities representatives • community representatives • site neighbours

Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIBLA602A Establish and maintain a blasting system

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining a blasting system in the coal and metalliferous mining and extractive industries. It includes: identifying and evaluating the criteria; establishing the system, support arrangements and systems for audit and review.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and evaluate the criteria	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining blasting systems 1.2. Identify blasting methods and options from an analysis of all relevant technical, environmental and operational and financial information 1.3. Identify the requirements for blasting materials against mine requirements 1.4. Identify the requirements for, and purpose of blasting equipment and supporting infrastructure in accordance with mine design and system of mining 1.5. Assess potential sites/routes for blasting and supporting infrastructure by visit, and locate and confirm on mine plan
2. Establish a system for blasting	2.1. Establish procedures to identify ***hazards*** and analyse, evaluate and ***manage risks*** associated with blasting 2.2. Develop operational procedures for blasting, covering methods, materials, equipment and infrastructure from site and legislative requirements and incorporate into site documentation 2.3. Establish recording and reporting procedures for blasting information 2.4. Develop safe blasting procedures, including design ***management***, for the site to comply with company and statutory/legal requirements 2.5. Establish ***monitoring*** procedures for blasting 2.6. Develop and establish procedures for reviewing and modifying work processes 2.7. Develop blasting system as an integral component of the OHS ***management*** system of the mine
3. Establish the support arrangements	3.1. Identify and establish appropriate magazine/storage facilities from an analysis of all relevant statutory, technical and management information

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	3.2. Identify and establish appropriate transportation and handling methods for explosives from an analysis of all relevant statutory, technical, operational and financial information 3.3. Develop maintenance procedures for blasting equipment and infrastructure systems from statutory and site requirements, and incorporate into site documentation 3.4. Establish a program, including systems and procedures, to satisfy blasting and shotfiring training requirements
4. Establish systems for audit and review	4.1. Establish procedures to evaluate and confirm the blasting system compliance with statutory and site requirements 4.2. Identify and assess future blasting and supporting infrastructure system requirements and incorporate into ***planning processes*** 4.3. Establish procedures to confirm the currency and compliance of blasting equipment and infrastructure maintenance and safety standards 4.4. Establish procedures for incorporating feedback into the ***audit*** and review process 4.5. Establish procedures to confirm the currency, relevance and compliance of the blasting training program against identified requirements 4.6. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit 4.7. Audit emergency response and evacuation plans and procedures for compliance with legislative and site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain a blasting system:

- apply legislative, organisation and site requirements and procedures
- access and use mine-site information and recording systems
- apply blasting operations analyse and review techniques
- apply information analysis techniques
- apply brainstorming to collect maximum information
- apply fault-tree or equivalent type of risk analysis
- apply human, financial and physical resource coordinate procedures
- apply delegation of responsibility and tasks
- apply action plans develop procedures
- apply systems and equipment evaluation procedures
- facilitate groups to work together
- apply hazards and assess risk identification procedures
- apply procedures for identifying or establishing mine-site facilities for blasting management
- apply effective decision making
- apply magazines and contents management requirements and procedures
- apply projects and tasks manage procedures
- participate as a team member
- read and interpret mine plans
- apply report write techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain a blasting system:

- blast design criteria
- blast monitoring techniques
- blast timings
- blasting operations
- characteristics and applications of blasting products
- charging techniques
- computer applications

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- customer/client relations
- delays and their application
- document control systems
- drilling plant and equipment
- environmental management
- explosives disposal procedures
- explosives inventory control requirements
- explosives procurement procedures
- control of explosives
- explosives storage and magazine requirements
- explosives transport and handling requirements
- mine products and services
- misfire management techniques
- negotiation techniques
- quality systems
- risk management: principles, strategies and applications
- safety and health requirements
- statutory requirements and controls
- surveying
- team management techniques

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Evidence Guide

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Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining blasting systems • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of blasting systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to undertake and complete the establishing and maintenance of blasting systems • consistent and timely establishing and maintenance of blasting systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain blasting systems
	  • consistent and timely gaining of approval of

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	blasting systems • provision of clear, timely required support and advice on the implementation of blasting systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazard is:	• a source of potential harm or a situation with a potential to cause loss
Risk is:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Management is responsible for:	• blasting schedules in compliance and accordance with statutory/legal regulations that are in place • site conditions that may vary and may require differing methods of safe initiation (weather, winds, storms etc) • geological factors influencing blast design, initiation systems and environmental compliance • geographic location of site in relation to neighbours who may be affected by consequence of blast or blast design • alternate explosives types and availability that may affect or influence blast design • delay designs and ignition sources • blasting licences, competencies and permits • laser profiling • bore hole tracking • interpreting and communicating information • pursuing optimum performance in blasting operations • monitoring/videoing blasting practice for safety

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	and other considerations
	• monitoring processes for noise and vibration
	• processes for minimising fly rock
	• statutory/legal compliance may include:
	  • Australian Standard
	  • Australian Explosives Manufacturers Safety Committee Code of Good Practice: Precursors for Explosives
	  • Australian Code for the Transport of Explosives by Road & Rail (Australian Explosives Code)
	  • common law
	• dangerous goods
	• development of training policies/programs to aid compliance
	• environmental
	• explosives
	• industrial relations
	• local government
	• minerals and extractive industry licensing
	• navigation
	• planning and assessment
	• safety and health
	• trade practices
	• waterways
	• weights and measures
	• workers compensation/WorkCover

Monitoring of activities may include:	• review of written reports • performance appraisal • auditing procedures
Planning processes may include:	• interpreting and communicating information • business/performance plans • location • tender specifications • communication liaison/public relations • resources • statutory/legal/organisational requirements and control • resource parameters • technical standards established by industry and/or enterprise • legal issues/processes

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	• planning approvals • surveying • monitoring
Audit is:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Unit Sector(s)

Blasting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICAR301A Rehabilitate exploration site

Modification History

Not applicable.

Unit Descriptor

This unit covers the rehabilitation of an exploration sites in the drilling and metalliferous mining industry industries. It includes: preparing for and rehabilitating exploration sites; capping drill holes; and rehabilitating access tracks.

Application of the Unit

This unit is appropriate for those working in operational roles, at exploration sites within:

- Drilling
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for site rehabilitation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the rehabilitation of an exploration sites 1.2. Access, interpret and apply the rehabilitation plan and Environmental Work Procedures (EWP) 1.3. Identify, address and report ***potential hazards*** and risks 1.4. Select and wear appropriate ***personal protective equipment*** 1.5. Obtain map of area and identify location of sites to be rehabilitated 1.6. Establish communication system and protocols 1.7. Carry out rehabilitation plant and equipment pre-start checks
2. Rehabilitate exploration site	2.1. Assess ***hydrocarbon*** spills at drill site and deal with according to legislation, environmental policies and procedures and company requirements 2.2. Ensure saline or contaminated water sumps are completely dry 2.3. Push waste materials resulting from exploration operations into sumps, and back fill, compact and cover with topsoil 2.4. Operate ***plant and machinery***, following EWPs, to scarify all cleared areas 2.5. Retrieve cleared vegetation and put back onto rehabilitated site 2.6. Remove and dispose of all rubbish 2.7. ***Re-vegetate*** area if required under the rehabilitation plan 2.8. Record rehabilitation details 2.9. ***Inspect*** rehabilitated site for compliance with environmental and legislative requirements and safe entry
3. Cap drill holes	3.1. Excavate hole collar to suitable depth 3.2. Pour excess drill chips into drill hole 3.3. Select and insert appropriate hole plug firmly into hole opening or collar, such that

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	water ingress and future erosion is prevented 3.4. Backfill excavated soil onto plug and compact firmly ensuring that sufficient compacted soil is left on hole to allow for subsidence and encourage run off 3.5. Peg hole site and mark with ID number
4. Rehabilitate access tracks	4.1. Remove all windrows 4.2. Scarify tracks 4.3. Retrieve as much as possible cleared vegetation and restore to access track 4.4. Block or disguise the entrance to the track with any available ***materials***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to rehabilitate exploration sites:

- apply legislative, organisation and site requirements and procedures
- apply communication and recording skills
- apply manual and mechanical handling techniques
- apply maintenance requirements and procedures
- apply procedures to acquire required licences and permits
- apply diagnostic and troubleshooting procedures
- use hand tools
- apply problem solving techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to rehabilitate exploration sites:

- provisions of the Workplace Health and Safety Acts, their regulations and code of practice
- particular State or Territory regulations relating to rehabilitation
- relevant OHS requirements associated with rehabilitation activities
- rehabilitation principles and practices
- rehabilitation planning
- environmental work procedures
- hazards associated with rehabilitation work
- types and operational characteristics of plant/equipment used in rehabilitation operations
- basic maintenance
- environmental principles and practices
- re-vegetation methods and types
- hole-capping methods
- recording and reporting

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for rehabilitating exploration sites • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the rehabilitation of exploration sites • working with others to undertake and complete the rehabilitation of exploration sites that meet all of the required outcomes • consistent timely completion of the rehabilitation of exploration sites that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the rehabilitation of exploration sites

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Potential hazards may include:	• disturbance or interruption of services • solar radiation • dust • noise • air- and soil-borne micro-organisms • chemicals and hazardous substances • sharp hand tools and equipment • manual handling • moving machinery and machinery parts • slippery and uneven surfaces • dehydration • stings
Personal protective equipment may include:	• hat • boots • overalls • gloves • goggles • respirator or face mask • face guard • hearing protection • drinking water • sunscreen lotion • hard hat
Hydrocarbons may include:	• diesel/petrol • hydraulic fluid

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Plant and machinery may include:	• hydraulic excavators • wheel loaders • crawler dozers • crawler loaders • motor graders and scrapers • dump trucks • backhoes • log skidders
Re-vegetation methods may include:	• hand sowing • direct seeding • tube planting • hand or machine assisted planting of seedlings • planting of divisions • transplanting • assisted regeneration • natural regeneration
Inspections may include:	• checking that access paths are clear of debris, waste material, tools, equipment and machinery • ensuring that equipment and machinery is disabled after use • ensuring that signage and safety barriers are removed • removing debris and waste from the work area swiftly and efficiently
Materials may include:	• cleared vegetation • dead logs • boulders

Unit Sector(s)

Conservation and Rehabilitation

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICAR302A Rehabilitate small mine site

Modification History

Not applicable.

Unit Descriptor

This unit covers the rehabilitation of small mine sites in the metalliferous mining and extractive industry. It includes: establishing the rehabilitation requirements and plan; and rehabilitating the site.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish rehabilitation requirements and plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the rehabilitation of small mine sites 1.2. Identify rehabilitation and ***vegetation*** removal requirements from recognised rehabilitation standards, environmental requirements, applicable codes and instructions 1.3. Inspect site to determine impact of mining or other operations and specific rehabilitation requirements 1.4. Identify natural water flow/water courses around the site 1.5. Ensure removal of all recoverable equipment no longer required 1.6. Identify specific equipment, materials and operations required to rehabilitate the site 1.7. Identify, address and report hazards associated with the rehabilitation operation 1.8. Determine and plan sequence to minimise rehabilitation time and residual damage to meet environmental care principles, statutory body requirements and applicable OHS and fire safety regulations, policies and precautions
2. Rehabilitate site	2.1. Observe and follow OHS procedures, practices, policies, and precautions 2.2. Adhere to site environmental concerns in accordance with relevant national, state, and local ***legislation*** and/or regulations 2.3. Select and use ***equipment and materials*** for rehabilitation 2.4. Remove abandoned materials and rubbish from site 2.5. Restore surface in accordance with ***rehabilitation plan*** 2.6. Remove residual mullock to designated location 2.7. Establish run-off and drainage channels to approximate natural drain lines in accordance with rehabilitation plan

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	2.8. Maintain ***communication*** with other personnel and external authorities to ensure effective rehabilitation of the site

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to rehabilitate small mine site:

- apply legislative, organisation and site requirements and procedures
- recognise non-native plants
- apply mine site rehabilitation requirements
- communicate and liaise with internal and external bodies/groups
- read and interpret written material appropriate for local conditions
- read graphic information including charts, tables and weather maps
- use hand and power tools
- apply operational safety requirements
- maintain records
- identify faults
- apply environmental constraints
- apply procedures for the disposal of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to rehabilitate small mine site:

- specific site rehabilitation requirements
- small underground mine rehabilitation methods and materials
- statutory requirements for rehabilitation
- hazards associated with rehabilitation operations
- rehabilitation planning
- OHS guidelines, procedures, and principles, including manual handling
- general environmental care and statutory body requirements
- ground-water behaviour and handling

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for rehabilitating small mine sites • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the rehabilitation of small mine sites • working with others to undertake and complete the rehabilitation of small mine sites that meet all of the required outcomes • consistent timely completion of the rehabilitation of small mine sites that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the rehabilitation of small mine sites

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australia standards • code of practice
Vegetation may include:	• introduced plants • garden plants • exotic plants
Equipment and materials may include:	• steel plate or grids • steel or plastic pipes • fencing • steel mesh • steel posts • barbed wire • earth bank • padlocks • steel pins
Legislation may include Acts and Regulation dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment • Native Title
Rehabilitation plans may include requirements for:	• drainage • posts and tags • trenches • mine shafts • auger holes • mullock • rubbish • planting of plants and vegetation
Communications may include:	• radio • telephone • audible signals (bells, whistles, sirens)

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	• physical signals • written and verbal means

Unit Sector(s)

Conservation and Rehabilitation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICAR401A Supervise rehabilitation operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of rehabilitation operations in resources and infrastructure industries. It includes: planning, preparing for and initiating rehabilitation operations; and monitoring, adjusting and reporting on the execution of the rehabilitation operations.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist role, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, prepare for and initiate operations	1.1. Access, interpret, apply and share with team members the ***compliance documentation*** relevant to conducting rehabilitation operations 1.2. Access and share with team members the ***geological***, ***hydrological and survey data*** required to complete the rehabilitation operations 1.3. Prepare an action plan, in consultation with team members, which makes best use of the available resource and meets the ***site rehabilitation requirements*** and relevant legislative, site and manufacturer's requirements and procedures 1.4. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of rehabilitation operations 1.5. Issue clear and timely ***instructions*** to team members and others involved for the safe, effective and efficient conduct in the rehabilitation operations to meet site rehabilitation requirements
2. Monitor, adjust and report on execution of the operations	2.1. Ensure safe, effective and efficient execution of rehabilitation tasks 2.2. Monitor rehabilitation operations performance to ensure achievement of the site rehabilitation requirements 2.3. Initiate adjustments to work programs to take into account non-achievement of planned outcomes 2.4. Complete and submit reports 2.5. Recommend changes to improve the safety, efficiency and effectiveness of the rehabilitation operations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise rehabilitation operations:

- apply legislative, organisation and site requirements and procedures
- provide team leadership
- apply techniques for selecting operational techniques
- apply techniques for selecting and assigning plant and equipment
- apply procedures for developing and administering work plans

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise rehabilitation operations:

- risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- site operational requirements
- team leadership techniques
- operational techniques required for execution of the rehabilitation tasks
- plant and equipment capabilities
- work planning techniques
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of rehabilitation operations • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of rehabilitation operations • working with others to plan, prepare and conduct rehabilitation operations • provision of clear and timely instruction and supervision by the individual of those involved in rehabilitation operations • evidence of the consistent successful supervision of rehabilitation operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct rehabilitation operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the rehabilitation operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • water tables or other water sources
Hydrological data may include:	• rainfall • surface water, existing streams and dams • catchment areas and runoff characteristics • groundwater and bores
Survey data may include relevant site-specific information in relation to:	• existing and required landform plans • drainage and water management structure plans
Site rehabilitation requirements may be conditions of development approval, mining lease (or equivalent) conditions and/or organisation's requirements and may include:	• progressive and/or final land form changes • environmental structures • soil management • drainage and/or water management • revegetation • maintenance of rehabilitated areas
Resources may include:	• labour • materials • services • plant and equipment
Instructions may issued in briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • refuelling arrangements • operational conditions

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	• obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Unit Sector(s)

Conservation and Rehabilitation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBM201A Strip pile heads

Modification History

Not applicable.

Unit Descriptor

This unit covers the stripping of pile heads in the civil construction industry. It includes planning and preparing, stripping pile heads, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.5. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Strip pile heads	2.1. Check work platform and false work in preparation for ***pile head stripping procedures*** 2.2. Determine and mark specified height of pile cut-off 2.3. Cut horizontal groove to the specified depth at the marked height around the pile to avoid spalling 2.4. Attach pile excess to a crane with a sling 2.5. Strip back concrete above the groove from steel bars/stands without damage to the reinforcing 2.6. Cut steel reinforcing to specified length, and bend to project drawings and specifications
3. Clean up	3.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 3.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to strip pile heads:

- apply legislative, organisation and site requirements and procedures for stripping pile heads
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to strip pile heads:

- site and equipment safety requirements
- bridge construction and sequencing
- pile head stripping
- steel reinforcement and stressing strands
- concrete
- pneumatic and electric jack hammers and scabblers
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- slinging procedures for supporting pile off cut
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for stripping pile heads • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of pile head stripping • working with others to undertake and complete the stripping of pile heads that meets all of the required outcomes • consistent timely completion of pile heads stripping that safely, effectively and efficiently meets the required outcomes • completion of the set out and stripping of a minimum of six pile heads to design specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the stripping of pile heads

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevantcompliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• any rural or urban bridge construction project • multi-span and single span bridges either over water or over land
Signage requirements may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, **tools and equipment** may include:	• cut off saws • jack hammers • scabblers • compressors • hoses • tape measures • marking equipment • crow bars • bending pipes • scaffolding • ladders • slings • cranes
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean up management
Pile head stripping procedures may include:	• identifying the height to be cut • using a cut off saw to make an access cut to a specified depth around the pile • using a jack hammer to remove the bulk of

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	concrete from the pile • using a scabbler to expose the reinforcement • bending the reinforcement to tie with the footing/pile cap/abutment reinforcement

Unit Sector(s)

Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBM301A Maintain concrete bridges

Modification History

Not applicable.

Unit Descriptor

This unit covers the maintenance of concrete bridges in the civil construction industry. It includes planning and preparing, maintaining bridges, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.5. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Maintain bridge	2.1. Follow work order/schedule of ***repairs*** and ***maintenance*** to organisational requirements 2.2. Inspect bridge structure to confirm nature and extent of fault 2.3. Report significant deterioration of existing faults or new faults 2.4. Carry out repairs and maintenance of bridge structure in accordance with details from the schedule of repairs and maintenance documentation 2.5. Report completed repairs and maintenance, noting and documenting any new faults in accordance with organisational requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to maintain concrete bridges:

- apply legislative, organisation and site requirements and procedures for maintaining concrete bridges
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to maintain concrete bridges:

- site and equipment safety requirements
- bridge components
- bridge faults and repair methods
- safety procedures for working at heights and over water
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for maintaining concrete bridges • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of concrete bridge maintenance • working with others to undertake and complete the maintenance of concrete bridges that meets all of the required outcomes • consistent timely completion of concrete bridge maintenance that safely, effectively and efficiently meets the required outcomes • completion of a minimum of four different maintenance and repair activities on three separate bridges, including at least one deck joint repair, to specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the maintenance of concrete bridges

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• bridges • wharves • piers • jetties
Signage requirements may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, **tools and equipment** may include:	• fall arrestors • tag lines • drifts • spanners • pneumatic wrenches and drills • compressors and hoses • tape measures • marking equipment • ladders • winches • lifting equipment • power saws • paint brushes • rollers • jacks • mixing equipment • underbridge inspection unit • scaffolding • EWP
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection

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	• noise • vibration • dust and clean-up management
Repairs may include:	• concrete repairs • restoration of metallic components • tightening and replacing fasteners and bolts • maintenance or replacement of bridge furniture and deck joints
Maintenance may include:	• painting • anti-graffiti treatment
Materials may include:	• bearings • bolts • fasteners • paint • anti-graffiti treatments • concrete

Unit Sector(s)

Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBM302A Install pre-cast girders

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of pre-cast girders in the civil construction industry. It includes planning and preparing, installing bearings, installing girders, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Install bearings	2.1. Determine ***bearing types*** and position from project drawings and specifications 2.2. Check bearing dimensions and materials for quality 2.3. Install bearings as required 2.4. Identify and install locating brackets/bolts in preparation for the placement of ***girders***
3. Install girders	3.1. Determine individual girder location from project drawings and specifications 3.2. Determine fitting sequence to install girders in accordance with engineering instructions and advise the ***crane*** operator 3.3. Check girders for ***conformity*** to design prior to lifting in accordance with standard industry work practices 3.4. Check lifting points on girders for serviceability and attach and use tag lines to guide girder to position 3.5. Place timber packing to support girder load 3.6. Use drift to align holes and insert and

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	tension locating bolts 3.7. Adjust bearings to specification to provide support across the full face of the bearing to the girder 3.8. ***Brace*** girder to prevent lateral movement or rolling 3.9. Remove, roll and store tag lines 3.10. Remove excess epoxy putty or mortar 3.11. Remove timber packing at specified time
4. Clean up	4.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 4.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install pre-cast girders:

- apply legislative, organisation and site requirements and procedures for installing pre-cast girders
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install pre-cast girders:

- site and equipment safety requirements
- bridge construction and sequencing
- pre-cast concrete girder installation
- bearing types and installation
- safe lifting techniques
- structural technology
- safe working procedures for working at heights and over water
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing pre-cast girders • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of pre-cast girder installation • working with others to undertake and complete the installation of pre-cast girders that meets all of the required outcomes • consistent timely completion of pre-cast girder installation that safely, effectively and efficiently meets the required outcomes • installation of all the pre-cast concrete girders on a multi-span bridge of not less than twenty metres in length to specifications. It is to include installing bearings, installing lateral bracing, installing locating brackets and bolts, identifying hog, checking direction of skew angle, lateral bow and twist prior to lifting
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of pre-cast girders

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• any rural or urban bridge construction project
Signage requirements may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, **tools and equipment** may include:	• fall arrestors • tag lines • drifts • spanners • pneumatic wrenches • tape measures • marking equipment • cranes and slings/launching gantry • ladders • spatulas • pointing trowels • buckets • spirit levels • scaffolding
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Bearing types may include:	• elastomeric • mortar pad

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	• pot • stainless steel sliding plates • fixed rocker • rocker • roller • fixed plate • sliding
Girders may include:	• 'I' girders and 'T' girders • those secured with locating brackets and bolts
Crane may include lifting over:	• water • land • by launching truss
Conformity of design tolerances may include:	• skew angle • variation for hog • lateral bow • twisting
Brace may include:	• timber props • metal adjustable props • metal rods
Materials may include:	• pre-cast girders • locating brackets and bolts • bearings • timber packing • mortar and/or epoxy

Unit Sector(s)

Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBM303A Install pre-cast parapets

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of pre-cast parapets in the civil construction industry. It includes planning and preparing, confirming installation details, installing pre-cast parapet units, finishing parapets, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.5. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Confirm installation details	2.1. Measure stirrup spacing and compare with spacing of cast in ligatures and brackets to eliminate difficulties when positioning units 2.2. Determine individual pre-cast ***parapet*** unit location from project drawings and specifications 2.3. Determine sequence of parapet ***installation*** and carry out in accordance with workplace procedures 2.4. Check parapets for conformity to design prior to ***lifting*** 2.5. Check lifting points on pre-cast units for serviceability
3. Install pre-cast parapet units	3.1. Raise pre-cast parapet end unit to allow ***fitting*** of bracket 3.2. Manoeuvre pre-cast parapet unit into the vertical position in accordance with installation procedures 3.3. Guide pre-cast parapet unit into approximate position and attach locating

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	bolts to cast in brackets 3.4. Correctly establish vertical and horizontal alignment of pre-cast parapet end units and tighten bolts 3.5. Install intermediate pre-cast parapet units in approximate positions 3.6. Check pre-cast end units for correct height and alignment 3.7. Adjust intermediate pre-cast parapet units to design alignment and tighten locating bolts 3.8. Install anchor cable and fix ends to job specifications
4. Finish parapet	4.1. Install ***services*** and fittings to job specifications as required 4.2. Fit joints with foam inserts and groat 4.3. Form up and prepare cast in-situ infills of the pre-cast units 4.4. Place concrete and finish to design 4.5. Dismantle formwork and remove from site
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install pre-cast parapets:

- apply legislative, organisation and site requirements and procedures for installing pre-cast parapets
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install pre-cast parapets:

- site and equipment safety requirements
- bridge construction and sequencing
- pre-cast concrete parapets and installation
- bridge barriers
- concrete and concreting
- service installation
- safe lifting techniques
- safe working procedures for working at heights and over water
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing pre-cast parapets • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of pre-cast parapet installation • working with others to undertake and complete the installation of pre-cast parapets that meets all of the required outcomes • consistent timely completion of pre-cast parapet installation that safely, effectively and efficiently meets the required outcomes • position, fix and finish the pre-cast parapet units, including the installation of end units, services and fittings for a multi-span bridge with a minimum length of twenty metres to specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of pre-cast parapets

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with State or Territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• any rural or urban bridge construction project
Signage requirements may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• fall arrestors • tag lines • drifts • spanners • pneumatic wrenches and drills • compressors and hoses • tape measures • marking equipment • ladders • winches • lifting equipment • trowels • slings • cranes • scaffolding
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Parapet may include:	• those secured with locating bolts and anchor cables
Installation of parapets may	• lifting and placing parapets

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include:	• connecting end units • fitting and grouting joints • casting in-situ infills • installing services and fittings
Lifting with cranes may include lifting over:	• water • land
Fitting may include:	• lights • phones • bridge rail • signs • delineators
Services may include:	• power • telecommunications
Materials may include:	• pre-cast parapets • locating bolts • 'U' brackets • end units • anchor cables • foam inserts • grout • concrete

Unit Sector(s)

Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBM304A Operate a bridge inspection unit

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of a bridge inspection unit in the civil construction industry. It includes planning and preparing, checking bridge inspection units, setting up bridge inspection units, operating bridge inspection units, carrying out operator maintenance, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Check bridge inspection unit	2.1. Check tyres and rollers in accordance with operators' manual 2.2. Carry out start-up, park and shutdown procedures in accordance with manufacturer's and/or site specific requirements 2.3. Check equipment controls and functions, including implements or other attachments, brakes and manoeuvrability for serviceability and report any faults 2.4. Check emergency safety devices to conform with instructions in operators' manual
3. Set up bridge inspection unit	3.1. Evaluate work activity and identify the most productive operating technique 3.2. Unfold bucket/platform and prepare for use 3.3. Position ***bridge inspection unit*** for work application and engage stabilisers to set equipment base level into place 3.4. Place tools, equipment and materials into

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	the bucket/platform to job application requirements 3.5. Enter bucket/platform using the approved procedure 3.6. Correctly attach fall arrest device
4. Operate bridge inspection unit	4.1. Manoeuvre bridge inspection unit to work location as per manufacturer's recommendation and safely and effectively manoeuvre platform into position 4.2. Carry out performance of bridge inspection unit to instructions under varied site conditions in accordance with standard work practices 4.3. Safely avoid obstacles 4.4. Clearly communicate location adjustment requirements to driver 4.5. Operate controls to return bridge inspection unit to travel position and proceed with shutdown sequence in accordance with operator's manual
5. Carry out operator maintenance	5.1. Conduct inspection and fault finding in accordance with manufacturer's specifications and/or organisational requirements 5.2. Carry out and record regular programmed maintenance tasks in accordance with manufacturer's and/or organisational requirements
6. Clean up	6.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate a bridge inspection unit:

- apply legislative, organisation and site requirements and procedures for operating a bridge inspection unit
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate a bridge inspection unit:

- site and equipment safety requirements
- bridge construction
- bridge components
- under bridge inspection units and operation
- safe working procedures for working at heights and over water
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating a bridge inspection unit • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of bridge inspection unit operations • working with others to undertake and complete the operation of bridge inspection units that meets all of the required outcomes • consistent timely completion of bridge inspection unit operation that safely, effectively and efficiently meets the required outcomes • operation of a self propelled or truck mounted under bridge inspection unit to inspect the underside and the outer sides of a whole bridge of at least twenty metres in length, for two bridges, wharves or jetties to specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of bridge inspection units

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevantcompliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Signage requirements may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, **tools and equipment** may include:	• fall arrestors • signage • under bridge inspection units • buckets or platforms • maintenance tools and equipment
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Bridge inspection unit may include:	• truck mounted and self propelled units ***And may be used on***: • bridges, wharves, piers and jetties • concrete or timbre structures

Unit Sector(s)

Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICBM305A Install pre-cast concrete bridge decks

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of pre-cast concrete bridge decks in the civil construction industry. It includes planning and preparing, installing bearings, installing concrete bridge decks, fixing bridge fittings, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply compliance documentation relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.5. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Install bearings	2.1. Determine ***bearing types*** and position from project drawings and specifications 2.2. Check bearing dimensions and material for quality against specifications 2.3. Install bearings as required by project drawings 2.4. Identify locating brackets/bolts and install in preparation for placement of girders as required
3. Install concrete bridge deck	3.1. Prepare ***deck*** components for grouting prior to placement in accordance with deck design and specifications 3.2. Place deck components 3.3. Carry out and complete pre-fabricated concrete decking grouting 3.4. Insert and tension pre-fabricated concrete decking transverse stressing bar as specified 3.5. Grout transverse stressing bar to specifications

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	3.6. Grout anchor bolts 3.7. Place and specify deck joints of pre-fabricated decking and scuppers
4. Fix bridge fittings	4.1. Fit posts and bridge rails as per project drawings and specifications 4.2. Assemble pre-fabricated stairs and install to specifications where required
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install pre-cast concrete bridge decks:

- apply legislative, organisation and site requirements and procedures for the installation of pre-cast concrete bridge decks
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install pre-cast concrete bridge decks:

- site and equipment safety requirements
- bridge construction and sequencing
- pre-cast concrete bridge decks and installation
- bearing types and installation
- safe lifting techniques
- safe working procedures, working at heights and over water
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing pre-cast concrete bridge decks • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of pre-cast concrete bridge deck installation • working with others to undertake and complete the installation of pre-cast concrete bridge decks that meets all of the required outcomes • consistent timely completion of pre-cast concrete bridge deck installation that safely, effectively and efficiently meets the required outcomes • installation of pre-cast concrete deck units including installation of transverse stressing bars and bearings on a multi-span bridge with a minimum length of twenty metres to specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of pre-cast concrete bridge decks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• bridges • piers • wharves • jetties
Signage requirements may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, **tools and equipment** may include:	• fall arrestors • tag lines • drifts • spanners • pneumatic wrenches and drills • compressors and hoses • tape measures • marking equipment • ladders • winches • lifting equipment • power saws • slings • cranes • scaffolding
Environmental protection requirements may include:	• organisational/project environmental management plans • waste management • water quality protection • noise • vibration • dust and clean up management

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Bearing types may include:	• elastomeric • mortar pad
Deck may include:	• bridge rails • pre-cast kerbing • stairs • posts • hand rails • deck joints
Materials may include:	• pre-cast concrete bridge deck units • bearings • bridge rails • bridge joints • mortar • epoxy

Unit Sector(s)

Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBM306A Undertake concreting work on concrete bridges

Modification History

Not applicable.

Unit Descriptor

This unit covers the undertaking of concreting work on concrete bridges in the civil construction industry. It includes planning and preparing, placing concrete, finishing concrete, curing concrete, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.5. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Place concrete	2.1. Identify location and design of ***concrete work*** from site drawings, engineer's design and ***placing*** specifications 2.2. Remove debris and waste from pour area 2.3. Apply release agent where specified 2.4. Pour concrete in horizontal layers into location to levels as indicated by markers, level pegs or lines 2.5. Implement ***methods to avoid segregation*** 2.6. Consolidate poured concrete during process using approved compaction or vibration methods in accordance with standards
3. Finish concrete	3.1. Screed concrete to correct levels and/or grades using appropriate straight edged tool or formwork mounted screeds 3.2. Float screeded concrete surface 3.3. Define control/structural joints and ***finish*** edges according to engineers' drawings and specifications

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	3.4. Finish concrete surface to architect's design and/or engineers' specifications
4. Cure concrete	4.1. Concrete is cured to project specifications and in accordance with standards 4.2. Maintain ***curing*** agent/method on concrete surface to project specifications 4.3. Protection is provided to concrete during curing process by isolating and/or barricading the area
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to undertake concreting work on concrete bridges:

- apply legislative, organisation and site requirements and procedures for undertaking concreting work on concrete bridges
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to undertake concreting work on concrete bridges:

- site and equipment safety requirements
- bridge construction and sequencing
- steel reinforcement characteristics
- concrete characteristics and properties
- concreting principles
- structural technology
- working in confined spaces
- working at heights and over water
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for undertaking concreting work on concrete bridges • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of concreting work on concrete bridges • working with others to undertake and complete concreting work on concrete bridges that meets all of the required outcomes • consistent timely completion of concreting work on concrete bridges that safely, effectively and efficiently meets the required outcomes • completion of concrete placing, finishing and curing for casting in situ decks, concrete footings/pile caps/abutments, piers and headstocks, to the finished form, on a concrete multi-span bridge with a minimum length of twenty metres, to design specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection

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	and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the concreting work on concrete bridges

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• any rural or urban bridge construction project
Signage requirements may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, **tools and equipment** may include:	• floats • trowels • edging tools • screeds • wheelbarrows • tremmies • chutes • vibrators • rakes • short handle shovels • rods • hammers • hoses • buckets • sponges • brushes
Environmental protection requirements may include:	• organisational/project environmental management plans • waste management • water quality protection • noise • vibration • dust and clean up management

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Concrete work may include:	• cast in-situ concrete decks • piers/headstocks • footings/pile caps/abutments • cast-in situ girders
Placing may include:	• wheelbarrows • pumping equipment • kibble • trammie • truck placed • shovelling • vibrating
Methods to avoid segregation may include:	• minimising the height of a vertical drop • using a tremmie or the flexible hose of a concrete pump
Finish may include:	• steel trowel • mechanical trowelling machine • broom finished • wood float • bull float • brushed
Curing may include:	• flooding • coating with a membrane or plastic sheeting
Materials may include:	• concrete • curing agents • plastic membranes • water • sand

Unit Sector(s)

Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBM307A Construct formwork and false work on concrete bridges

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction of formwork and falsework on concrete bridges in the civil construction industry. It includes planning and preparing, erecting formwork, inspecting formwork, stripping formwork, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.5. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Prepare for formwork erection	2.1. Identify location and design of ***formwork***/***falsework*** from site drawings, engineers' design and specifications 2.2. Accurately place ***key set out locations*** to requirements of job drawings 2.3. Prepare work area and materials for the erection of formwork/falsework 2.4. Assemble formwork shutters to design form requirements and specified dimensions 2.5. Sequentially erect formwork support system (falsework) according to initial set out and standards 2.6. Check scaffolding and/or hand railing where required in accordance with job specification and standards 2.7. Place ***bracing*** of formwork support to job requirements and design specifications to maintain rigidity and stability 2.8. Set support system to correct height level,

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	line and tolerance
3. Erect formwork	3.1. Fabricate, position and fix formwork for beams, drop panels and cantilevers into place 3.2. Assemble, erect and fix formwork for walls into place, plumb and to specified tolerance 3.3. Fabricate, position and fix ***soffit*** formwork into place 3.4. Fix edge boxing to formwork in correct position and plumb to alignment. 3.5. Brace formwork 3.6. Install ***cast-ins***, ***inserts and penetration blocks*** to locations
4. Inspect formwork	4.1. Inspect erected formwork and formwork support system for safety and quality of work in accordance with standards 4.2. Remove loose dirt, sawdust and other waste material with due care to welfare of site personnel and public 4.3. Apply release agent to formwork in accordance with specifications 4.4. Monitor formwork and support system during concrete pour
5. Stripping of formwork	5.1. Obtain approval to remove formwork support from appropriate site authority 5.2. Carefully remove edge boxing and braces, denail, clean and store/stack 5.3. Back off support system to appropriate height to loosen soffit decking 5.4. Safely and sequentially remove formwork, denail and relocate or store 5.5. Select and install appropriate back propping system, where applicable, according to standards and engineers' requirements
6. Clean up	6.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct formwork and falsework on concrete bridges:

- apply legislative, organisation and site requirements and procedures for constructing formwork and falsework on concrete bridges
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to construct formwork and falsework on concrete bridges:

- site and equipment safety requirements
- bridge construction and sequencing
- formwork and falsework
- steel reinforcement
- concrete
- bracing and loading
- structural characteristics of reinforced concrete
- working in confined spaces
- working at heights and over water
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for constructing formwork and falsework on concrete bridges • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of formwork and falsework construction on concrete bridges • working with others to undertake and complete the construction of formwork and falsework on concrete bridges that meets all of the required outcomes • consistent timely completion of formwork and falsework construction on concrete bridges that safely, effectively and efficiently meets the required outcomes • erection and dismantling of the formwork and falsework for casting in situ decks, concrete footings/pile caps/abutments, piers and headstocks on a concrete multi-span bridge with a minimum length of twenty metres, to design specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and

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	infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction of formwork and falsework on concrete bridges

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with State or Territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• any rural or urban bridge construction project
Signage requirements may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, **tools and equipment** may include:	• spanners • saws • power saws • nail guns • drills • string lines • levelling equipment • spirit levels • chisels • hammers • compressors • hoses • tape measures • rulers • marking equipment • crow bars • pinch bars • scaffolding • ladders
Environmental protection requirements may include:	• organisational/project environmental management plans • waste management • water quality protection

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	• noise • vibration • dust and clean up management
Formwork is erected to provide a moulded shape, structure and finish to:	• cast-in situ concrete decks • piers/headstocks • footings/pile caps/abutments • cast-in situ girders
Falsework may include:	• a temporary support structure designed to carry the various loads imposed on the formwork during construction of bridge components
Key set out locations may include:	• points • lines • profiles • grids
Bracing may include:	• adjustable props • timber
Soffit may include:	• flooring • decking • base work making up the underside of formwork
Cast-ins, **inserts and penetration blocks** may include:	• services • anchor bolts • other fixtures
Materials may include:	• screws • nails • plywood • structural timber • proprietary shutters • walers • soldiers • soldier sets • release agent • adjustable props • brackets • base plates • she bolts • clips

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Unit Sector(s)

Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS201A Conduct tack coat spraying operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of tack coat spraying operations in the civil construction industry. It includes planning and preparing, preparing for spraying operations, spraying tack coat, operating hand lance, and performing operator maintenance and clean up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project ***traffic*** management plan 1.4. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Prepare for spraying operations	2.1. Carry out pre-operational checks in accordance with organisation, manufacturer or site authorised procedures 2.2. Check tank for cleanliness and contaminants prior to filling, and ensure transfer connections are completed and fully functional 2.3. Conduct all loading and unloading operations safely in accordance with manufacturer's or company instructions 2.4. Fill spray tank and ensure adequate ***materials*** are made available to perform spray operations 2.5. Identify ***application rate*** and translate into the relevant travel speed and pump characteristics where necessary 2.6. Select jets and fit to spray bar to enable spraying operations
3. Spray tack coat	3.1. Select and modify spraying techniques ***for tack coating*** to meet changing work conditions and ***types of surfaces*** 3.2. Conduct, control and monitor spraying operations ***of tack coat sprayer*** to ensure that materials are sprayed to specification

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	3.3. Carry out operations adjacent to traffic in accordance with authorised traffic management controls in a safe manner at all times 3.4. Complete work in accordance with the agreed plan and outcomes within the operating capacities of the allocated equipment
4. Operate hand lance	4.1. Determine situations where hand spraying is required 4.2. Inspect hand lance to ensure the equipment is safe and operating correctly 4.3. Inspect and set spray jets for job 4.4. Conduct, control and monitor hand spraying operations to ensure that materials are sprayed to specification 4.5. Carry out hand spraying operations adjacent to traffic in accordance with authorised traffic management controls in a safe manner at all times 4.6. Clean and store hand spraying equipment after use
5. Operator maintenance and clean up	5.1. Conduct inspection and fault finding in accordance with manufacturer's or organisational requirements 5.2. Clean spray bars and lances and ensure jets are free of contaminants 5.3. Empty and clean tank of bituminous products, in accordance with EPA and company procedures 5.4. Carry out routine operational servicing and lubrication tasks 5.5. Carry out minor maintenance 5.6. Maintain records in accordance with site requirements including identification of potential and current equipment problems 5.7. Perform work to the requirements of the organisation's environmental instructions and EPA standards 5.8. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.9. Clean, check, maintain and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct tack coat spraying operations:

- apply legislative, organisation and site requirements and procedures for conducting tack coat spraying operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct tack coat spraying operations:

- site and equipment safety requirements
- equipment types, characteristics, technical capabilities and limitations
- operational and maintenance procedures
- bituminous surfacing operations
- site isolation and traffic control responsibilities and authorities
- bituminous products
- tack coat spraying techniques
- processes for the calculation of material requirements, application rates and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting tack coat spraying operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of tack coat spraying operations • working with others to undertake and complete tack coat spraying operations that meets all of the required outcomes • consistent timely completion of tack coat spraying operations that safely, effectively and efficiently meets the required outcomes • a minimum of 500m^2 of an existing pavement to be tack coated prior to asphalting using the spray bar, completed in a minimum of two separate runs • a minimum of two areas of at least 20m^2 to be tack coated using a hand lance
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete tack coat spraying operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevantcompliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with State or Territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• trucks • tanks • spraying equipment • hand lances • transfer hoses • brooms • jets • shovels • compressors • storage tanks
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Materials may include:	• bitumen emulsions (cationic and anionic) • cutback bitumen • cutters • distillates • water
Application rate are:	• to be followed within specified tolerances

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Tack coating refers to:	• an application in preparation for further surface coatings which are to include but not be limited to asphalt, geo-textile and slurry
Types of surface may include:	• spray seal • asphalt • concrete • granular pavement • pavement which is limited to a clean dry surface which may be coated day or night
Tack coat sprayer may be:	• a mechanical bitumen sprayer or a truck/trailer mounted bitumen emulsion sprayer used to apply tack coat at a specified rate on a pavement surface • they also provide facilities for hand spraying

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS202A Hand spread asphalt

Modification History

Not applicable.

Unit Descriptor

This unit covers the hand spreading of asphalt in the civil construction industry. It includes planning and preparing, spreading asphalt, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project ***traffic*** management plan 1.4. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Spread asphalt	2.1. Conduct hand ***asphalt spreading*** in safe proximity to the paver 2.2. Hand place ***asphalt*** to required level and line 2.3. Achieve even finish when raking and construct ***joints*** to correct level 2.4. Identify and repair low spots, high spots and ***defects*** in the mat 2.5. Identify and report faults in the mat detected prior to or during operations
3. Clean up	3.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 3.2. Clean, check, maintain and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to hand spread asphalt:

- apply legislative, organisation and site requirements and procedures for hand spreading asphalt
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to hand spread asphalt:

- site and equipment safety requirements
- equipment types, characteristics and limitations
- operational and maintenance procedures
- hand spreading asphalt
- site isolation and traffic control responsibilities and authorities
- the properties of asphalt
- the AAPA code of practice for working with SBS modified binders
- processes for the calculation of material requirements
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for hand spreading asphalt
	• implementation of requirements, procedures and techniques for the safe, effective and efficient hand spreading of asphalt
	• working with others to undertake and complete the hand spreading of asphalt that meets all of the required outcomes
	• consistent timely completion of hand spreading of asphalt that safely, effectively and efficiently meets the required outcomes
	• a minimum of 5m^2 of asphalt (per patch) to line and level is to be hand spread without segregation:
	  • two patches over 50mm thick, each with a different type of asphalt
	  • two patches under 50mm thick, each with a different type of asphalt
	• work with a paver to lay a minimum of 100 lineal metres of longitudinal joint and two transverse joints

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical

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	resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the hand spreading of asphalt

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe spreading including procedures minimising strain and fatigue, adherence to site traffic plans, precautions taken when working close to traffic, awareness of rollers and other vehicles working in the area • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation including extinguishing equipment fires, organisational First Aid requirements and evacuation

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Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadway
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• rakes • brooms • shovels • depth gauges and may include • straight edges • shovel baths • smart levels • string lines
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Asphalt spreading may include:	• constructing new work • repairing surfaces • repair of defects • paver runs • joints
Asphalt may include:	• dense graded • open graded • stone mastic
Joints may include:	• longitudinal • transverse • hot to hot • cold to hot

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Defects may include:	• bumps • segregation • blemishes • bony materials • voids
Materials may include:	• asphalt and release agents including emulsion, slurry and Styrene Butadiene Styrene modified binders (SBS) handled and used in accordance with the Australian Asphalt Paving Association (AAPA) code of practice for SBS modified binders

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS203A Safely handle bituminous materials

Modification History

Not applicable.

Unit Descriptor

This unit covers the safe handling of bituminous materials in the civil construction industry. It includes planning and preparing, working safely with bituminous materials, demonstrating First Aid for bitumen burns, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.4. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Work safely with bituminous materials	2.1. Identify characteristics and uses of bituminous ***materials*** and additives used in surfacing 2.2. Identify hazards associated with working with hot bitumen and implement ***minimisation strategies*** 2.3. Adhere to Australian Asphalt Paving Association (AAPA) code of practice for working with Styrene Butadiene Styrene (SBS) modified binders 2.4. Adhere to fire precautions associated with hot bitumen as detailed in Austroads Bitumen Sealing Safety Guide 2.5. Extract and apply information including OHS from materials safety data sheet associated with bituminous materials 2.6. Perform work to the requirements of the organisation's environmental policy and EPA standards
3. Demonstrate First Aid for bitumen burns	3.1. Perform First Aid in the case of a bitumen burn in accordance with Austroads Bitumen Sealing Safety Guide 3.2. Attach 'Bitumen Burn Tag' to victims of burns who are to be treated off site in accordance with Austroads Bitumen Sealing Safety Guide
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with project

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	environmental management plan 4.2. Clean, check, maintain and store tools and equipment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to safely handle bituminous materials:

- apply legislative, organisation and site requirements and procedures for safe handling of bituminous materials
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to safely handle bituminous materials:

- site and equipment safety requirements
- bituminous materials
- SBS modified binders
- materials safety data sheet requirements
- equipment types, characteristics, capabilities and limitations
- operational and maintenance procedures
- site isolation responsibilities and authorities
- processes for the calculation of material requirements
- materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for safe handling of bituminous materials • implementation of requirements, procedures and techniques for the safe, effective and efficient safe handling of bituminous materials • working with others to undertake and complete the safe handling of bituminous materials that meets all of the required outcomes • consistent timely completion of safe handling of bituminous materials that safely, effectively and efficiently meets the required outcomes • a minimum of five major hazards associated with handling bituminous materials are reported • a minimum of four bituminous materials are stored and used together • burn First Aid is applied to a minimum of one simulated burn and tagged accordingly • a minimum of one simulated fire involving a bituminous substance is extinguished
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical

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	resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the safe handling of bituminous materials

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures including extinguishing fires, organisational First Aid requirements and evacuation
Site locations may include:	• car parks • airport runways • container yards • hard stands

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	• footpaths • bikeways • roadways
Tools and equipment may include:	• infrared thermometers • hazchem signs • water finding paste
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Materials may include:	• bituminous materials (bitumen, cutback bitumen products, emulsions, asphalt, slurries, additives, fluxes, cutters) • aggregates • SBS modified binders • Polymers • geo-synthetic products
Minimisation strategies may include:	• temperature control • correct product changeover procedures • correct mixing/blending procedures • avoiding the presence of water in hot bitumen • avoiding fumes, exposure to heat, static electricity, fires, burns • safe handling of flammable substances

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS204A Conduct aggregate spreader box operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of aggregate spreader box operations in the civil construction industry. It includes planning and preparing, setting up and disconnecting the spreader box, spreading aggregate, performing hand spreading and spotting duties, and cleaning up Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project ***traffic*** management plan 1.4. Place cut on/cut off paper in preparation for bitumen spraying and at the end of the spray run 1.5. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Set up and disconnect spreader box	2.1. Connect equipment to the truck in accordance with the manufacturer's and site requirements prior to operation 2.2. Set spreader box to required width 2.3. Check ***spreader box operation*** to ensure correct operation 2.4. Check spreader box calibration as conforming to job specifications 2.5. Disconnect spreader box after operation in accordance with manufacturer's recommended procedures 2.6. Check truck to ensure that it is completely free of spreader and the spreader has all connecting parts correctly positioned for transportation or further use
3. Spread aggregate	3.1. Establish communication with the truck driver 3.2. Check and record size of aggregate prior to spreading 3.3. Remove cut on/cut off paper in preparation for ***aggregate spreading*** 3.4. Coordinate opening and closing of the

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	spreader box accurately with speed and application of aggregate 3.5. Instruct driver to adjust speed, line or angle of body as required to suit operations 3.6. ***Monitor*** spread rate and make adjustments to ensure aggregate is spread to specifications 3.7. Complete spreading within specifications
4. Perform hand spreading and spotting duties	4.1. Check and correct uniformity of run as required 4.2. Use correct hand spreading method to specifications
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct aggregate spreader box operations:

- apply legislative, organisation and site requirements and procedures for conducting aggregate spreader box operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct aggregate spreader box operations:

- site and equipment safety requirements
- sprayed seal types
- aggregate types and sizes
- spreader box operations
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures for the spreader box
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting aggregate spreader box operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conduct of aggregate spreader box operations • working with others to conduct aggregate spreader box operations that meets all of the required outcomes • consistent timely completion of aggregate spreader box operations that safely, effectively and efficiently meets the required outcomes • a minimum of four transverse paper joints are placed, picked up and disposed of • a minimum of six truck loads of at least two different aggregate are spread to the design application rate. It must include three runs of wings, tapers and turning lanes on at least three sites varying in complexity
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection

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	and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete aggregate spreader box operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Site locations may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• manual spreader boxes • remote controlled spreader boxes (preferred method) • shovels • hand brooms • drag brooms • measuring equipment • calibration test equipment • ride on spreader boxes • spreader boxes with rollers
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management

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	• water quality protection • noise • vibration • dust and clean-up management
Spreader box operation may include:	• box is securely in place • there is no spillage over side of box or tailgate • gates work smoothly • aggregate flows smoothly
Aggregate spreading is to be:	• applied on a sprayed bituminous material
Monitor may include:	• spreading started and finished on cut on/cut off paper • correct speed • adjustment of tray angle to ensure smooth flow of aggregate • correct line followed • aggregate spread at a uniform rate • stones do not bounce or scatter • over spreading or under spreading is corrected • over spread and under spread areas are identified and repaired • blockages in spreader are cleared quickly or truck directed off spreading area • areas where sprayer has missed marked and reported
Materials may include:	• aggregate • cut on/cut off paper • sprayed seal including seals, primers seals and emulsion seals including gritting of primes, bleeding seals and rack in seals

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICBS205A Roll aggregate in sprayed sealing operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the rolling of aggregate in sprayed sealing operations in the civil construction industry. It includes planning and preparing, preparing for rolling of aggregate, rolling aggregate, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Prepare for rolling of aggregate	2.1. Carry out pre-operational checks in accordance with manufacturer's or company procedures 2.2. Put in place appropriate traffic control measures for spreading operation 2.3. Inspect site and plan for potential hazards 2.4. Inflate tyres to correct pressure 2.5. Develop and follow work schedule
3. Roll aggregate	3.1. Operate roller to required ***rolling patterns to roll aggregate*** 3.2. Monitor quality of ***surface*** and report ***faults*** 3.3. Maintain safe distance from other vehicles 3.4. Control rolling speed to suit operations
4. Clean up	4.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 4.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to roll aggregate in sprayed sealing operations:

- apply legislative, organisation and site requirements and procedures for rolling aggregate in sprayed sealing operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to roll aggregate in sprayed sealing operations:

- site and equipment safety requirements
- self propelled multi wheel pneumatic tyred roller or combination roller operations
- sprayed sealing operations
- aggregate types and sizes
- primerseal and seal materials
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for rolling aggregate in sprayed sealing operations • implementation of requirements, procedures and techniques for the safe, effective and efficient rolling of aggregate in sprayed sealing operations • working with others to undertake and complete the rolling of aggregate in sprayed sealing operations that meets all of the required outcomes • consistent timely completion of rolling of aggregate in sprayed sealing operations that safely, effectively and efficiently meets the required outcomes • a minimum of three separate projects of at least 5000m^2 each are to be rolled • a minimum of three restricted access projects selected from a car park, sub-division, turning lane, intersection, corner and a cul-de-sac are to be rolled
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and

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	infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the rolling of aggregate in sprayed sealing operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures including extinguishing fires, organisational First Aid requirements and

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	evacuation
Site locations may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• self propelled multi wheel pneumatic tyred rollers • combination rollers
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Rolling patterns may include:	• rolling as close to aggregate spreader as is safe for first run • rolling in a straight line • rolling in direction of traffic flow unless instructed otherwise • rolling to pre-determined pattern ensuring uniform coverage of full length and width of cover • maintaining required speed (starts slow then increases speed, smooth start-up and stop) • not turning or stopping on newly sealed surface
Roll aggregate may include:	• the use of a self propelled, multi wheel pneumatic tyred roller and may include the use of a drag broom
Surface may include:	• primerseal • seal
Faults in the surface may include:	• missed areas • light or heavy spread areas

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	• corrugations • uncovered binder • binder pick up
Materials may include:	• primer seals • seals • aggregates

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS206A Conduct pavement sweeping operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of pavement sweeping operations in the civil construction industry. It includes planning and preparing, sweeping surfaces, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Sweep surfaces	2.1. Check broom core for wear 2.2. Identify wind direction and develop a ***sweeping plan*** to minimise the creation of dust 2.3. Operate broom at a speed and pressure that ensures maximum sweeping effect and minimum damage to bristles 2.4. Extend sweeping 300 mm (minimum) outside the area to be covered, where possible 2.5. Carry out preliminary and final sweeps where there is excessive material 2.6. Sweep material away from work in progress and away from newly finished work 2.7. Use correct ***sweeping*** procedures to suit ***surface*** type 2.8. Remove loose aggregate from newly sealed surface according to job specifications and without damage
3. Clean up	3.1. Deposit sweepings to avoid contamination drains, pits or nature strips 3.2. Create windrows to protect drains from run off due to overnight rain

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	3.3. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 3.4. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct pavement sweeping operations:

- apply legislative, organisation and site requirements and procedures for conducting pavement sweeping operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct pavement sweeping operations:

- site and equipment safety requirements
- pavement sweeping operations
- operating platforms for use with mounted broom attachments
- primerseal, seal, asphalt and aggregate materials
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material removal, sweeping patterns and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting pavement sweeping operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of pavement sweeping operations • working with others to undertake and complete pavement sweeping operations that meets all of the required outcomes • consistent timely completion of pavement sweeping operations that safely, effectively and efficiently meets the required outcomes • a minimum of 2000m^2 are to be swept on each of three projects, including primerseal or priming, to job specifications • a minimum of 2000m^2 are to be swept on each of three projects, including asphalt or sealed or slurry, to job specifications • a minimum of 2000m^2 are to be swept on each of three projects removing loose aggregate from newly completed primerseal or seal, to job specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete pavement sweeping operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• tractors • skid steer loader • trucks • drawn brooms • attachments to various items of equipment • broom cores
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Sweeping plan may include:	• noting wind direction and methods to minimise dust blowing on to the seal, neighbouring properties, vehicular traffic and other work in the vicinity
Sweeping operations may include:	• surface preparation for bituminous surfaces • removal of loose aggregate
Surface to be swept may include:	• prior to primer or primersealing • primed surface • sealed or asphalt surface • concrete surface

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Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS207A Take samples of materials used in road surfacing

Modification History

Not applicable.

Unit Descriptor

This unit covers the taking of samples of materials used in road surfacing in the civil construction industry. It includes planning and preparing, taking samples, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.4. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Take samples	2.1. Obtain suitable clean containers with tight fitting lids 2.2. Take ***sample*** in accordance with approved procedure/job instructions/Australian standards/Austroads test methods 2.3. ***Handle***, ***label*** and store sample in accordance with approved procedure/job instructions/Australian standards/Austroads test methods 2.4. Adhere to ***safety precautions*** for obtaining and handling hot samples
3. Clean up	3.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 3.2. Clean, check, maintain and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to take samples of materials used in road surfacing:

- apply legislative, organisation and site requirements and procedures for taking samples of materials used in road surfacing
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to take samples of materials used in road surfacing:

- site and equipment safety requirements
- bituminous materials
- sampling techniques
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for taking samples of materials used in road surfacing
	• implementation of requirements, procedures and techniques for the safe, effective and efficient taking of samples of materials used in road surfacing
	• working with others to undertake and complete the taking of samples of materials used in road surfacing that meets all of the required outcomes
	• consistent timely completion of taking of samples of materials used in road surfacing that safely, effectively and efficiently meets the required outcomes
	• sample of bituminous materials to be taken include:
	  • at least one sample of an aggregate material
	  • at least one sample of either asphalt or slurry
	  • each of the above to be taken from each of a container, site and stock pile

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.

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	• Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the taking of samples of materials used in road surfacing

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• State or Territory legislation and regulations, organisational safety policies and procedures, and project safety plan including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation including extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• car parks • airport runways • container yards • hard stands

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	• footpaths • bikeways • roadway
Tools and equipment may include:	• sample containers (tins, hessian bags, plastic bags) • labels and marking pens • tags, string and wire
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Sample sources may include:	• bulk storage • tanker • on site drums or stock piles
Handle may include:	• non contamination by other bituminous materials, solvents or cleaning materials • not reheating samples • sample container being tightly sealed immediately when the cold sample is placed in it • sample container not immersed in solvent or wiped with solvent saturated cloth • spilled materials on the outside of the container wiped off with a clean dry cloth immediately after sealing
Label and report may include:	• type of material taken • number of samples taken • where samples were taken from (including identifying number of container or vehicle) • specific job requirements • size of sample required • identification mark • date of sampling • supplier name • delivery docket details • name of sample taker • quantity of materials represented by the sample
Safe precautions may include:	• no smoking • gloves and safety glasses worn while sampling

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	and sealing containers • where sampling valves or outlets are used the sampler should stand to the windward side and as far from the outlet as possible • samples to be taken slowly to prevent splashing • container placed on a firm flat surface to prevent spilling or splashing
Materials may include:	• aggregates • hot bitumen • bitumen emulsion • modified bitumen • additives • slurries • pre-coated materials • cutters • cutback bitumens • flux oils • asphalt

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS208A Conduct road maintenance operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of road maintenance operations in the civil construction industry. It includes planning and preparing, setting up road maintenance unit, repairing damaged surfaces, carrying out operator maintenance, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set up road maintenance unit	2.1. Prepare for ***road maintenance operations*** 2.2. Carry out pre-operational checks for ***road maintenance unit*** 2.3. Check operating components of the truck for serviceability 2.4. Check tank for prevention of contamination 2.5. Fill tank with the required ***materials*** to perform repair operations 2.6. Determine standard mix of emulsion and/or type of asphalt ready for application
3. Repair damaged surfaces	3.1. Carry out start-up, park and shutdown procedures 3.2. Position truck forward of the ***damaged areas*** to be repaired 3.3. Clean area to be repaired free of dust and debris 3.4. Select equipment as appropriate to the defective area requiring repair 3.5. Prepare defective area for resurfacing or filling 3.6. Complete resurfacing or filling of the damaged area 3.7. Finish repaired ***surface*** ready for use

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	3.8. Measure, calculate and ***record*** material quantities and additives for each site 3.9. Conduct, control and monitor repairing operations to ensure that materials are placed to specification
4. Carry out operator maintenance	4.1. Conduct fault finding inspections in accordance with manufacturer's specifications and organisational requirements 4.2. Maintain equipment and the asphalt storage hopper in good working order 4.3. Carry out routine operational servicing and lubrication tasks to manufacturer's and organisational requirements 4.4. Maintain equipment condition reports and records
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct road maintenance operations:

- apply legislative, organisation and site requirements and procedures for conducting road maintenance operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct road maintenance operations:

- site and equipment safety requirements
- bitumen/asphalt repair procedures
- bituminous materials and their characteristics
- pavement defects
- bituminous surfacing operations
- processes for heating bitumen
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting road maintenance operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conduct of road maintenance operations • working with others to undertake and complete the conduct of road maintenance operations that meets all of the required outcomes • consistent timely completion of road maintenance operations that safely, effectively and efficiently meets the required outcomes • completion of road maintenance operations for a minimum of 50m^2 of road surface defects by loading and mixing the specified materials, applying all of the road maintenance unit equipment and repairing the damaged areas to specification • completion of all records of repair work undertaken and materials used for each site
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and

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	infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of road maintenance operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• road maintenance unit (truck) and all of its attachments • hoses • watering cans • hand lances • rakes • shovels • vibrating plates • jack hammers • brooms
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Road maintenance operations may include:	• loading and unloading materials • cleaning damaged areas • digging out and replacing asphalt or bitumen surfaces • hand spreading asphalt • hand screeding • jack hammering • edge preparation ready for replacement surface • hand lancing emulsion

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	• compacting with a vibrating plate • cleaning the truck sticking surfaces with distillate
Road maintenance unit refers to:	• a purpose built truck fitted with a hopper, conveyor belt, tank, spreader, tools and equipment for the repair of pavement defects, set up to carry bitumen emulsion, cutback bitumen, aggregate, cold mix, asphalt, granular pavement material, tools and equipment required to prepare, fill, level and compact pavement defects
Materials may include:	• bitumen emulsions • asphalts • aggregates • water • cleaning agents
Damaged areas may include:	• pot holes • uneven, stripped or worn small areas requiring resurfacing • sunken trenches • kerb and channel joints • cracks • other minor defects
Surface may include:	• spray sealed road • asphaltic concrete pavement
Record may include:	• necessary calculations for quantities, rates of application achieved • a repair record for each site

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS301A Conduct profile planer operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of profile planer operations in the civil construction industry. It includes planning and preparing, conducting profile planer pre-operational checks, operating profile planer, selecting, removing and fitting attachments, relocating the profile planer, carrying out profile planer operator maintenance, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Conduct profile planer pre-operational checks	2.1. Carry out pre-start, start-up, park and shutdown procedures in accordance with manufacturer's and/or site specific requirements 2.2. Check ***profile planer*** controls and functions, including implements or other ***attachments***, brakes and manoeuvrability for serviceability and rectify and report any faults
3. Operate profile planer	3.1. Identify site hazards associated with profile planer ***operations*** and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for profile planer to achieve optimum output in accordance with manufacturer's design specifications while achieving specified tolerances 3.3. Operate profile planer to work instructions 3.4. Operate profile planer to remove material to an agreed line and level within specified tolerances
4. Select, remove and fit attachments	4.1. Select attachment for the task 4.2. Remove and fit attachment according to manufacturer's manual and site

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	requirements 4.3. Test attachment to ensure correct fitting and operation 4.4. Use attachment in accordance with manufacturer's recommendations and design limits 4.5. Clean and store removed attachments in designated location
5. Relocate the profile planer	5.1. Move profile planer safely between worksites, observing relevant codes and traffic management requirements 5.2. Prepare profile planer for relocation
6. Carry out profile planer operator maintenance	6.1. Park profile planer safely, prepare for maintenance and shutdown 6.2. Conduct inspection and fault finding 6.3. Remove defective parts and replace safely and effectively 6.4. Carry out regular programmed maintenances tasks
7. Clean up	7.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 7.2. Clean, check, and store profile planer, tools and equipment and conduct ***operator maintenance***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct profile planer operations:

- apply legislative, organisation and site requirements and procedures for conducting profile planer operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct profile planer operations:

- profile planer types, characteristics, technical capabilities and limitations
- basic soil types and characteristics
- basic principles of soil compaction
- site and equipment safety requirements
- profile planer techniques related to essential tasks
- processes for interpreting engineering drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- methods of changing machine attachments
- safe operating techniques in all terrain
- basic earthworks calculations
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting profile planer operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conduct of profile planer operations • working with others to undertake and complete the conduct of profile planer operations that meets all of the required outcomes • consistent timely completion of profile planer operations that safely, effectively and efficiently meets the required outcomes • the conduct of profile planer operations are to be performed in a minimum of two different material types/surfaces types and are to include the mandatory tasks of removal/excavation of materials to a thickness and a line/level, loading of trucks and stockpiling • operations including asphalt pavement, milling, edge planning, straight work and confined work (such as intersection, carpark etc) • the application of emergency procedures • the conduct of authorised operator maintenance
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete profile planer operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• hand tools • maintenance equipment relevant to the particular profile planer
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Profile planer refers to:	• a self propelled wheeled or tracked machine designed for the purpose of in-situ milling of construction materials, and transferring the milled materials via conveyor to storage or tip trucks
Attachments may include:	• additional or interchangeable conveyor systems
Operations may include:	• asphalt pavement milling • edge planning • straight work • confined work (such as intersection, carpark etc)
Operator maintenance may refer to:	• cleaning • authorised servicing • monitoring, recording and reporting of faults • authorised minor replacements

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	• provision of assistance to maintenance personnel during maintenance and repair activities

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS302A Conduct paver screeding operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of paver screeding operations in the civil construction industry. It includes planning and preparing, setting up paver screed, operating paver screed, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set up paver screed	2.1. ***Set equipment*** to the correct levels to lay material on ***surface*** to specifications 2.2. Set ***electronic levelling equipment*** to check level 2.3. Set heating controls for screed to specifications 2.4. Set screed controls for correct operation
3. Operate paver screed	3.1. Identify site hazards associated with ***paver screeding operations*** and use safe operating techniques to minimise risk 3.2. Adjust screed during ***operation*** to ensure work remains within specifications 3.3. Identify faults in the mat and take correct action to rectify faults 3.4. Monitor work of rake hands and rollers to ensure they are keeping up with the paver 3.5. Maintain ***communication*** with paver operator monitoring the progress of the job 3.6. Notify paver operator of problems with the mat 3.7. Perform operator maintenance in accordance with manufacturer's or company instructions

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4. Clean up	4.1. Handle/dispose of waste material safely in accordance with requirement of regulatory bodies, OHS, MSDS and EPA 4.2. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 4.3. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct paver screeding operations:

- apply legislative, organisation and site requirements and procedures for conducting paver screeding operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct paver screeding operations:

- site and equipment safety requirements
- paver screed operations
- aggregate types and sizes
- bituminous materials
- longitudinal and transverse joints
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material uniformity and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- safe operating techniques in all terrain
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting paver screeding operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of paver screeding operations
	• working with others to undertake and complete paver screeding operations that meets all of the required outcomes
	• consistent timely completion of paver screeding operations that safely, effectively and efficiently meets the required outcomes
	• the conduct of paver screeding operations are to be performed in a minimum of two different bituminous material types/surface types and are to include the mandatory tasks:
	  • three longitudinal joints (of at least 100m) to be constructed to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions
	  • six transverse joints to be constructed to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions
	  • five sections of straight paving (one of at least 100 linear metres) to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications

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	and/or work instructions • three intersections to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions • one of the above tasks to include at least one mode of automatic screed levelling
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:

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	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete paver screeding operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

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	• emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• paver screeds • shovels • measuring tapes • depth gauges • standard tool kits • string lines • thermometers • straight edges
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Set equipment may include:	• use of boards to correct the height for transverse joint construction • setting up string lines and sensors to job

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	specifications • adjusting machine attachments to string line • preparing and setting a screed to achieve a specified level and texture of asphalt
Surface may include:	• formed/prepared roads • pads • sealed • primersealed • primed • asphalt • profiled • profile concrete • slurry
Electronic levelling equipment may include:	• grade sensors/averaging sensors • matching shoes • levelling beams • sonic, contact and laser
Paver screeding operations may include:	• uniform flow of asphalt • electronic/manual levelling • auguring • width of the screed • adjustment of the crown • control of burners, • hot and cold transverse and longitudinal joints • manual screed level control • automatic screed level control
Operation may include:	• spreading bituminous materials • mixing materials • spreading granular materials • spreading concrete materials
Communication method may include:	• verbal instructions • two way radio • hand signals • mobile phone
Materials may include:	• aggregates • gravel asphalt • granular materials

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Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS303A Conduct materials transfer vehicle operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of materials transfer vehicle operations in the civil construction industry. It includes planning and preparing, transferring materials, carrying out operator maintenance, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Transfer materials	2.1. Establish ***communication*** with other plant operators and personnel to ensure safety of operation 2.2. Fit feeder bin following manufacturer's instructions 2.3. Perform start-up, park and shutdown procedures in accordance with manufacturer's instructions or company procedures 2.4. Test vehicle controls and functions before commencing operations 2.5. Position transfer vehicle to deliver asphalt to paver without spillage 2.6. Direct delivery truck into position with the ***materials transfer vehicle*** 2.7. Receive asphalt from delivery truck into the materials transfer vehicle hoppers and monitor to ensure recommended levels 2.8. Deliver asphalt to paver smoothly and without impact that would cause bounce in the paver 2.9. Maintain speed as directed by paver operator during transfer operations
3. Carry out operator	3.1. Park safely, shot down and prepare the

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maintenance	material transfer vehicle for maintenance 3.2. Conduct inspection and fault finding in accordance with manufacturer's specifications and/or organisational requirements 3.3. Remove defective parts and replace safely and effectively 3.4. Carry out regular programmed maintenance tasks 3.5. Clean out equipment between changeover of product and/or at the end of the work period
4. Clean up	4.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 4.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct materials transfer vehicle operations:

- apply legislative, organisation and site requirements and procedures for conduct of materials transfer vehicle operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct materials transfer vehicle operations:

- site and equipment safety requirements
- asphalt paving techniques
- material transfer vehicle equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- safe operating techniques in all terrain
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting materials transfer vehicle operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of materials transfer vehicle operations • working with others to undertake and complete materials transfer vehicle operations that meets all of the required outcomes • consistent timely completion of materials transfer vehicle operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete materials transfer vehicle operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

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	• emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• materials transfer vehicles (MTVs) • shovels • scrapers • brooms • basic tool kits
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Communication method may include:	• verbal instructions • 2-way radio • hand signals • mobile phone
Materials transfer vehicle	• access to and from sites

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(**MTV**) tasks may include:	• manoeuvring of MTV on site • receiving materials from trucks • loading pave • stockpiling • loading trucks
Materials may include:	• asphalt • granular paving materials • oil based cleaning products

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS304A Compact asphalt with rollers

Modification History

Not applicable.

Unit Descriptor

This unit covers the compacting of asphalt with rollers in the civil construction industry. It includes planning and preparing, preparing roller, compacting asphalt, carrying out roller operation maintenance, relocating roller, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Prepare roller	2.1. Perform pre-operational checks as per manufacturer's or company instructions 2.2. Record job specifications 2.3. Produce work schedule 2.4. Plan water usage and replenishment 2.5. Set tyres to required pressure (self propelled, multi-wheeled pneumatic tyred rollers)
3. Compact asphalt	3.1. Identify site hazards associated with compacting asphalt with ***rollers*** and use safe operating techniques to minimise risk 3.2. Determine speed and rolling patterns according to job requirements 3.3. Set amplitude and frequency as directed for vibratory steel wheeled rollers 3.4. Avoid damage to **other structures** 3.5. Monitor watering system to prevent pick up 3.6. Maintain uniform speed and rolling pattern to job specification 3.7. Compact joints to job specifications 3.8. Compact final surface free of blemishes or rolling marks

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	3.9. Maintain safe distance between rollers, other plant and the paving crew
4. Carry out roller operator maintenance	4.1. Park Roller safely, shutdown and prepare for maintenance as per manufacturer's manual and/or organisational requirements 4.2. Conduct inspection and fault finding 4.3. Remove and replace defective parts safely and effectively 4.4. Carry out regular programmed maintenance tasks
5. Relocate roller	5.1. Prepare roller for relocation 5.2. Drive roller safely on highways and construction sites, observing highway code and local safety requirements
6. Clean up	6.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to compact asphalt with rollers:

- apply legislative, organisation and site requirements and procedures for compacting of asphalt with rollers
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to compact asphalt with rollers:

- site and equipment safety requirements
- asphalt compacting techniques
- asphalt paving operations
- asphalt strength and performance characteristics
- edge and joint treatments
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material uniformity and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- safe operating techniques in all terrain
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for compacting asphalt with rollers • implementation of requirements, procedures and techniques for the safe, effective and efficient compacting of asphalt with rollers • working with others to undertake and complete the compacting of asphalt with rollers that meets all of the required outcomes • consistent timely compacting of asphalt with rollers that safely, effectively and efficiently meets the required outcomes • a minimum of 2000m^2 of asphalt is to be compacted to the determined pattern, the measured density, with the minimum number of passes specified and to job specifications for five projects, with at least one project under 50mm thick and one project over 50mm thick • a minimum of three longitudinal joints of 100 metres each and two transfer joints to be matched
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection

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	and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the compacting of asphalt with rollers

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• rollers • roller mats • spare water jets • water transfer equipment • shovels • brooms • rakes • basic tool kit
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Rollers may include:	• steel double drum static roller • double drum vibratory roller • self propelled multi wheel pneumatic tyred roller

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	• combination roller • roller operation is to include filling the roller with water
Other structures may include:	• kerb and channel • buildings
Materials may include:	• water • wetting agents

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS305A Conduct asphalt paver operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of asphalt paver operations in the civil construction industry. It includes planning and preparing, setting up asphalt paver, operating asphalt paver, carrying out operator maintenance, relocating paver, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Determine ***material*** to be laid and handling procedures to be employed according to specifications 1.5. Select plant, ***tools and equipment*** to carry out ***asphalt paver tasks*** consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set up asphalt paver	2.1. Carry out start-up, park, and shutdown procedures in accordance with manufacturer's and/or site specific requirements 2.2. Adjust, change or inflate tyres using safe handling procedures 2.3. Set equipment to correct levels to enable the laying of materials to specifications 2.4. Set heating controls for the screed board to specifications 2.5. Install feeder bin where required 2.6. Check materials spreading controls for correct operation
3. Operate asphalt paver	3.1. Engage delivery vehicles smoothly without bumping 3.2. Maintain appropriate uniform speed during spreading operations 3.3. Monitor and maintain asphalt mix according to job specifications 3.4. Maintain ***communication*** with screed hand

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	to ensure job is progressing satisfactorily and that materials are being spread to specifications 3.5. Monitor movement of the plant to ensure safety of asphalt crew
4. Carry out operator maintenance	4.1. Park paver safely, prepare for maintenance and shutdown as per manufacturer's manual and organisational requirements 4.2. Conduct inspection and fault finding 4.3. Carry out routine operational servicing and lubrication tasks 4.4. Carry out minor maintenance 4.5. Record performance of machine constantly to enable timely repair of equipment
5. Relocate paver	5.1. Prepare paver for relocation 5.2. Drive paver safely on highways and construction sites, observing highway code and local safety requirements
6. Clean up	6.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct asphalt paver operations:

- apply legislative, organisation and site requirements and procedures for conducting asphalt paver operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct asphalt paver operations:

- site and equipment safety requirements
- asphalt paving techniques
- asphalt paving operations
- asphalt strength and performance characteristics
- edge and joint treatments
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, mix, application rates, uniformity and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting asphalt paver operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of asphalt paver operations
	• working with others to undertake and complete asphalt paver operations that meets all of the required outcomes
	• consistent timely completion of asphalt paver operations that safely, effectively and efficiently meets the required outcomes
	• the conduct of paver operations are to be performed in a minimum of two different asphalt types/surface types and are to include the mandatory tasks from the unit scope and cover as a minimum:
	  • three longitudinal joints (of at least 100m) to be constructed to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions
	  • six transverse joints to be constructed to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions
	  • five sections of straight paving (one of at least 100 linear metres) to required thickness, uniformity, line and level, on both matching and unsupported edge in

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	accordance with project specifications and/or work instructions • three intersections to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions • operations to include residential, commercial and highway projects; and • material delivery through the paver is to include manual and automatic control
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using

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	more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete asphalt paver operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

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	• emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Materials may include:	• asphalt • granular materials • bound materials
Tools and equipment may include:	• pavers • basic tool kits • shovels
Asphalt paver tasks may include:	• spreading bituminous materials • mixing materials • spreading concrete • spreading granular materials
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management

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Communication methods may include:	• verbal instructions • two way radio • hand signals, • mobile phone

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS306A Conduct slurry sealing operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of slurry sealing operations in the civil construction industry. It includes planning and preparing, preparing mix materials, preparing surface for slurry application, applying slurry seal, carrying out operator maintenance, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Determine ***material*** to be laid and handling procedures to be employed according to specifications 1.5. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Prepare mix materials	2.1. Confirm material availability for ***slurry seal operations*** 2.2. Ascertain and confirm mix specifications 2.3. Check paving unit to ensure correct calibration of metering devices to mix specification 2.4. Clean and test spreader box for correct operation
3. Prepare surface for slurry application	3.1. Protect surfaces in accordance with company or client instructions 3.2. Note surface defects and rectify or treat during sealing operation 3.3. Clean and clear work area of loose stones, oil or other contaminants 3.4. Set out work area ensuring a straight edge is maintained along kerbs, shoulders and through intersections
4. Apply slurry seal	4.1. Maintain consistency of mix as per specification or job instructions 4.2. Mix spread in accordance with

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	specification or job instructions 4.3. Achieve surface finish in accordance with specification or job instruction 4.4. Ensure joints are neat with no overlapping or excess materials showing 4.5. Use hand spreading to cover small or difficult areas
5. Carry out operator maintenance	5.1. Conduct inspection and fault finding in accordance with manufacturer's specifications and/or organisational requirements 5.2. Carry out routine operational servicing and lubrication tasks 5.3. Carry out minor maintenance 5.4. Record performance of machine constantly to enable timely repair of equipment
6. Clean up	6.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct slurry sealing operations:

- apply legislative, organisation and site requirements and procedures for conducting slurry sealing operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct slurry sealing operations:

- site and equipment safety requirements
- slurry sealing techniques
- paving operations
- different types of slurry, mixes and their characteristics
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, mix, application rates and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting slurry sealing operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of slurry sealing operations • working with others to undertake and complete slurry sealing operations that meets all of the required outcomes • consistent timely completion of slurry sealing operations that safely, effectively and efficiently meets the required outcomes • a minimum of 300 metres of slurry seal is to be placed including preparing of the mixture to job specification for five projects and must include two rut filling only projects
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete slurry sealing operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Material may include:	• bitumen emulsion • aggregates (course, fine) • cement • additives • water
Tools and equipment may include:	• slurry sealing machines • basic tool kits • slurry boxes • squeegees • shovels and brooms • hessian/canvas drags
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management

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Slurry seal operation may include:	• use of raw materials, mixing and producing the mix to specification • correction work, overlay work, rut filling and cape seals • preparation for slurry sealing including a tack coat being first applied

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS307A Conduct bitumen sprayer operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting bitumen sprayer operations in the civil construction industry. It includes planning and preparing, setting up sprayer, loading sprayer, operating bitumen sprayer, operating hand lance, unloading and emptying sprayer, carrying out operator maintenance, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set up sprayer	2.1. Carry out pre-operational checks on ***bitumen sprayer*** in accordance with organisation, manufacturer or site authorised procedures 2.2. Ensure ancillary tanks are full and adequate ***materials*** are determined to perform spray operations 2.3. Check tank for prevention of contamination 2.4. Obtain and translate spraying details 2.5. Calculate spraying speed and pump rpm 2.6. Introduce correct amount of cutter 2.7. Fit appropriate number and size of jets to the spray bar
3. Load sprayer	3.1. Check previous load details for compatibility 3.2. Load tank with the prescribed type and quantity of material 3.3. Add additives and mix where required 3.4. Check temperature of the material and heat material to comply with manufacturer's specifications 3.5. Measure, calculate and ***record*** material quantities and additives

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4. Operate bitumen sprayer	4.1. Carry out start-up, park and shutdown procedures in accordance with manufacturer's and site requirements 4.2. Select and modify ***bitumen spraying*** techniques to appropriately meet changing work conditions 4.3. Plan work to maximise machine coverage and minimise hand spraying 4.4. Set control valves correctly for the type of operation 4.5. Conduct, control and monitor spraying operations to ensure materials are sprayed to specification 4.6. Carry out operations adjacent to traffic in accordance with authorised traffic management controls and in a safe manner at all times 4.7. Complete spraying without damage to property or vehicles
5. Operate hand lance	5.1. Inspect hand lance to ensure correct operation 5.2. Select ***hand lancing techniques*** to match work ***conditions*** 5.3. Conduct, control and monitor hand spraying operations to ensure compliance with specification 5.4. Carry out hand spraying operations adjacent to traffic in accordance with authorised traffic management plans
6. Unload/empty sprayer	6.1. Unload or empty tank into storage or waste 6.2. Clean tank interior and spray bar in accordance with Austroads Bitumen Sealing Safety Guide
7. Carry out operator maintenance	7.1. Conduct fault finding inspections in accordance with manufacturer's specifications and organisational requirements 7.2. Maintain spray bars and nozzles in good working order 7.3. Carry out routine operational servicing and lubrication tasks to manufacturer's and organisational requirements 7.4. Maintain equipment condition reports and

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	records
8. Clean up	8.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 8.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct bitumen sprayer operations:

- apply legislative, organisation and site requirements and procedures for conducting bitumen sprayer operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct bitumen sprayer operations:

- site and equipment safety requirements
- bitumen spraying procedures
- bituminous materials and their characteristics
- processes for heating bitumen
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- safe operating techniques in all terrain
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting bitumen sprayer operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of bitumen sprayer operations • working with others to undertake and complete bitumen sprayer operations that meets all of the required outcomes • consistent timely completion of bitumen sprayer operations that safely, effectively and efficiently meets the required outcomes • a minimum of three different materials to be loaded, mixed, heated and sprayed for two sprayer loads each to be used for two straight runs, two tapers or turning slots and two restricted areas to specified tolerances (spray runs to be a minimum total of 60% of the tank) • a minimum of two areas to be hand lanced, each with a different material and to the specified tolerance • completion of all calculations and spray sheets for the activities in the two previous dot points
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete bitumen sprayer operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• bitumen sprayers • hand lances • hoses, • rags • transfer hoses • jets • basic tool kits • bitumen spray charts • end shields • gas bottles • lighters
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management

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Bitumen sprayer refers to:	• vehicles which are purpose built, self contained units fitted with pumping and heating equipment that can load, mix heat and spray bituminous materials onto a pavement at a specified rate: they also provide facilities for hand spraying
Materials may include:	• bitumen • cutback bitumen • polymer modified binders • multi-grade bitumen • bitumen emulsions • kerosene • distillate • adhesion agents
Record may include:	• necessary calculations for quantities and rates of application achieved
Bitumen spraying is restricted to include mechanical bitumen: sprayers only and may include	• nominated rates of application • uniformity • loading • unloading • transferring • heating • spraying • hand lancing
Hand lancing techniques may include:	• vehicle being positioned so that hoses are not run over or entangled • correct pump pressure is used • area is sprayed to specification • a lookout is used to watch hoses and for other workers/public
Conditions may include:	• weather conditions including visibility day or night, prevailing winds and dust

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICBS308A Load aggregate using a purpose built loader

Modification History

Not applicable.

Unit Descriptor

This unit covers the loading of aggregate using a purpose built loader in the civil construction industry. It includes planning and preparing, preparing loader for operation, managing stack site, loading, screening and pre-coating aggregate, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Prepare loader for operation	2.1. Conduct pre-operational checks on ***loader*** in accordance with manufacturer's handbook or company instructions 2.2. Check type and quantity of pre-coat in tank and adjust to required level 2.3. Check loader vehicle for functionality 2.4. Check pre-coating requirements and select correct loader size 2.5. Record material quantities and screen sizes 2.6. Select screens appropriate to the aggregate size
3. Manage stack site	3.1. Identify and record aggregate sizes 3.2. Check ground conditions at stack site to minimise contamination 3.3. Estimate and record quantities in aggregate stockpiles 3.4. Identify suitable parking availability and reserve for trucks while waiting and loading 3.5. Position truck entry/exit signs as required 3.6. Keep stack site free from contamination by pre-coat material
4. Load/screen/pre-coat aggregate	4.1. Direct trucks into position to minimise dust to workers and contamination of aggregates

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	in windy conditions 4.2. Load appropriate aggregate quantities into trucks without contamination 4.3. Apply pre-coating uniformly to aggregate at specified rate 4.4. Load aggregate quantities accurately and record to company requirements
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to load aggregate using a purpose built loader:

- apply legislative, organisation and site requirements and procedures for loading aggregate using a purpose built loader
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to load aggregate using a purpose built loader:

- site and equipment safety requirements
- aggregate types, characteristics and uses
- aggregate loading procedures
- aggregate screening and pre-coating procedures
- stock pile control
- dust control
- silica, its properties and dangers
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material quantities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for loading aggregate using a purpose built loader • implementation of requirements, procedures and techniques for the safe, effective and efficient loading of aggregate using a purpose built loader • working with others to undertake and complete the loading of aggregate using a purpose built loader that meets all of the required outcomes • consistent timely loading of aggregate using a purpose built loader that safely, effectively and efficiently meets the required outcomes • a minimum of four truck loads of aggregate from two separate stock piles are to be loaded, screened and pre-coated to job specifications • a minimum of four truck loads of aggregate from two separate stock piles are to be loaded and screened to job specifications • site is cleaned in accordance with operational requirements
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical

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	resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the loading of aggregate using a purpose built loader

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• purpose built aggregate loaders • screens • tool kits
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Loader may include:	• truck mounted loader that can load, screen and pre-coat aggregate in one operation • trailer mounted that can screen and pre-coat in one operation (usually fed by a front end loader)
Materials may include:	• sealing aggregates • pre-coated aggregates • coating materials

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Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS309A Conduct self-propelled aggregate spreader operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of self-propelled aggregate spreader operations in the civil construction industry. It includes planning and preparing, operating aggregate spreader, performing hand spreading and spotting duties, carrying out operator maintenance, relocating aggregate spreader, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Operate aggregate spreader	2.1. Carry out start-up, park-up and shutdown procedures in accordance with manufacturer's and site requirements 2.2. Carry out safe operating procedures including operating controls, monitoring gauges and systems, and conducting safety checks 2.3. Record ***aggregate*** stone size and set equipment accordingly 2.4. Guide truck to spreader and engage securely prior to taking on load 2.5. Check calibration and adjust the machine as required 2.6. Select and modify spreading technique to meet ***changing work conditions*** 2.7. Monitor spreader speed to ensure aggregate is spread at specified rate
3. Perform hand spreading and spotting duties	3.1. Check uniformity of run and correct as required 3.2. Use correct hand spreading method to specifications
4. Carry out operator maintenance	4.1. Conduct inspection and fault finding in accordance with manufacturer's specifications and/or organisational

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	requirements 4.2. Carry out routine operational servicing and lubrication tasks 4.3. Carry out minor maintenance 4.4. Maintain equipment condition reports and records in accordance with organisational requirements
5. Relocate aggregate spreader	5.1. Prepare aggregate spreader for relocation 5.2. Drive aggregate spreader safely on highways and construction sites, observing highway code and local safety requirements
6. Clean up	6.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct self propelled aggregate spreader operations:

- apply legislative, organisation and site requirements and procedures for self propelled aggregate spreader operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct self propelled aggregate spreader operations:

- site and equipment safety requirements
- aggregates
- aggregate spreading procedures
- sprayed sealing operations
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and travel speed:
  - materials safety data sheets and materials handling methods
  - project quality requirements
  - civil construction terminology
  - safe operating techniques in all terrain
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting self propelled aggregate spreader operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of self propelled aggregate spreader operations • working with others to undertake and complete self propelled aggregate spreader operations that meets all of the required outcomes • consistent timely completion of self propelled aggregate spreader operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete self propelled aggregate spreader operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• self propelled aggregate spreaders and shovels • calibration equipment
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Aggregate is applied to:	• sprayed binder which has been distributed to surfaces that are to include but not be limited to granular materials, sprayed sealing, asphalt and may include concrete
Changing work conditions may include:	• surface materials • size and geometry of area to be spread • proximity to traffic and public • dust sensitive situations • aggregate seal size

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	• weather conditions
Materials may include:	• sealing aggregates • pre-coated aggregates

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS310A Conduct patching operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct or patching operations in the civil construction industry. It includes planning and preparing, setting up patching truck, repairing damaged surfaces, carrying out operator maintenance, and cleaning up.
Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Set up patching truck	2.1. Carry out pre-operational checks on ***patching operations truck*** 2.2. Check operating components of the truck for serviceability 2.3. Check tank for prevention of contamination 2.4. Fill tank with the required materials to perform repair operations 2.5. Determine standard mix of emulsion ready for application to ***surfaces***
3. Repair damaged surfaces	3.1. Carry out start-up, park, shutdown procedures 3.2. Position truck according to the range of the boom 3.3. Position boom manually or automatically over the ***damaged surface*** to be repaired 3.4. Blow area to be repaired free of dust and debris 3.5. Apply ***patching material*** to the defective area under the pressure of compressed air 3.6. Measure, calculate and record material quantities and additives for each site 3.7. Conduct, control and monitor ***patching work*** to ensure that materials are placed to specification

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4. Carry out operator maintenance	4.1. Conduct fault finding inspections in accordance with manufacturer's specifications and organisational requirements 4.2. Maintain boom and tank to ensure good working order 4.3. Carry out routine operational servicing and lubrication tasks 4.4. Maintain equipment condition reports and records
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct patching operations:

- apply legislative, organisation and site requirements and procedures for conducting patching operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct patching operations:

- site and equipment safety requirements
- bitumen patching procedures
- bituminous materials and their characteristics
- aggregate properties and conformance
- pavement defects
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements and application rates
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting patching operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of patching operations • working with others to undertake and conduct patching operations that meet all of the required outcomes • consistent timely completion of patching operations that safely, effectively and efficiently meet the required outcomes • completion of patching operations for a minimum of 20m^2 of road surface defects by loading and mixing the specified materials and patching the damaged areas to specification • completion of all records of patching work undertaken and materials used for each site
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and conduct patching operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS) and diagrams or sketches • safe work procedures or equivalent related to the conducting of patching operations • regulatory/legislative requirements pertaining to the conducting of patching operations • organisation work specifications and requirements • instructions issued by authorised organisational or external personnel • relevant Australian standards and Austroads • AAPA advisory notes and code of practice • quality requirements including dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising

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	and preventing hazards associated with traffic, uneven/unstable terrain, poles, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
Signage requirements may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may	• patching trucks with boom attachments • compressed air units

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include:	
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Patching operations truck refers to:	• a purpose built machine that is able to clean the area to be patched and apply bitumen emulsion and small size aggregate to fill/repair the area to be treated, set up to carry bitumen emulsion, aggregate, tools and equipment to prepare the patch, spray the emulsion and spread the aggregate
Damaged surfaces may include:	• pot holes • stripped or worn areas • other minor defects
Patching material may include:	• bitumen emulsion that is cationic and anionic
Patching work refers to:	• manual or automatic operating systems • vehicle being positioned so that hoses/boom are not run over, entangled or hit by other vehicles, correct pump pressure is used, area is patched to specification, and a lookout is used to watch hoses/boom and for other workers/public
Materials may include:	• bitumen emulsion • aggregates

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS311A Produce asphalt products

Modification History

Not applicable.

Unit Descriptor

This unit covers producing asphalt products in the civil construction industry. It includes planning and preparing, operating plant, carrying out operator maintenance, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.4. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Operate plant	2.1. Determine production requirements 2.2. Test aggregate and sand regularly as it arrives 2.3. Monitor cold feed bins to ensure sufficient raw ***material*** is maintained 2.4. Ensure proportion of material allocation is set to batch requirements 2.5. Select ***mix*** design to batch requirements 2.6. Heat and mix material to the correct temperature and tolerance 2.7. Store material ready for dispatch and loading 2.8. Monitor loading operations 2.9. ***Test*** mixed material regularly for bitumen content and grading
3. Carry out operator maintenance	3.1. Conduct fault finding inspections 3.2. Maintain equipment and mixing chamber to ensure good working order 3.3. Carry out routine operational servicing and lubrication tasks 3.4. Maintain equipment condition reports and records
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.2. Clean, check, maintain and store plant,

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	tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to produce asphalt products:

- apply legislative, organisation and site requirements and procedures for producing asphalt products
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to produce asphalt products:

- site and equipment safety requirements
- plant operations
- batching systems
- mix specifications (temperatures and tolerances)
- production requirements
- bituminous materials and their characteristics
- aggregate and sand properties and conformance
- additives
- processes for heating bitumen and controlling temperature
- testing procedures
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- processes for the calculation of material requirements and application rates
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for producing asphalt products • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of producing asphalt products • working with others to undertake and complete the production of asphalt products that meets all of the required outcomes • consistent timely production of asphalt products that safely, effectively and efficiently meets the required outcomes • completion of programming and planning of the mix specification for three separate mixes, with the temperature and mix produced within tolerance for 300 tonne of mix, without plant down time
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the production of asphalt products

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS) and diagrams or sketches • safe work procedures or equivalent related to the production of asphalt products • regulatory/legislative requirements pertaining to the production of asphalt products • instructions issued by authorised organisational or external personnel • relevant Australian standards and Austroads • AAPA advisory notes and code of practice • quality requirements including dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements may include:	• OHS requirements are to be in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with moving

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	machinery, flammable, toxic and dangerous materials, personnel, working in proximity to others, worksite visitors and the public • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Plant may include:	• fixed • mobile plant
Tools and equipment may include:	• asphalt plant and loaders
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Materials may include:	• aggregates • sand • various grades and types of bitumen • fly ash • additives • cutters • bitumen emulsions
Mix may include:	• cold mix (also known as pre-mix or SMK) is used for temporary patching of potholes, walkways, bike tracks and temporary pavements • hot mix is used for roads, car parks and other long term requirements • cold mix is usually produced at a lower temperature with cutter added to make the mix softer and extend usability

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Test may include:	• monitoring bitumen content, grading and may include maximum theoretical density, bulk density, voids, stability and flow

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS312A Conduct bitumen tanker operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of bitumen tanker operations in the civil construction industry. It includes planning and preparing, setting up the tanker for operations, loading tanker, transferring materials, emptying tanker, carrying out operator maintenance, cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.4. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Set up tanker for operation	2.1. Carry out pre-operational checks on ***bitumen tanker*** 2.2. Fill ancillary tanks and ensure adequate ***materials*** are available to perform tanker operations 2.3. Check tanks to prevent contamination 2.4. Obtain load details, including correct amount of any additives
3. Load tanker	3.1. Check previous load details for compatibility 3.2. Load tank with the prescribed amount of material 3.3. Add and mix additives to specifications 3.4. Check temperature of the material to ensure compliance with manufacturer's specifications 3.5. Measure, calculate and record material quantities and additives 3.6. Heat materials in accordance with manufacturer's/suppliers' instructions
4. Transfer materials	4.1. Set up transfer site according to Austroads Bitumen Sealing Safety Guide 4.2. Confirm transfer procedures with depot supervisor/sprayer driver 4.3. Transfer materials in accordance with organisational procedures 4.4. Record details of transferred materials

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5. Empty tanker	5.1. Empty tank into storage or waste in accordance with environmental plan 5.2. Clean tank interior in accordance with organisation instructions or Austroads Bitumen Sealing Safety Guide
6. Carry out operator maintenance	6.1. Inspect for faults in accordance with manufacturer's specifications and organisational requirements 6.2. Carry out routine operational servicing and lubrication tasks 6.3. Maintain equipment condition reports and records
7. Clean up	7.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 7.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct bitumen tanker operations:

- apply legislative, organisation and site requirements and procedures for conducting bitumen tanker operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct bitumen tanker operations:

- bituminous materials
- site and equipment safety requirements
- bituminous materials and their characteristics
- processes for heating bitumen
- operational, maintenance and basic diagnostic procedures
- materials safety data sheets and materials handling methods
- treatment for bitumen burns
- quality requirements and environmental systems and standards
- handling and safe use of bitumen hoses
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting bitumen tanker operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the conduct of bitumen tanker operations • working with others to undertake and complete the conduct of bitumen tanker operations that meets all of the required outcomes • consistent timely completion of the conduct of bitumen tanker operations that safely, effectively and efficiently meets the required outcomes • transfer a minimum of three different materials, one of which must be a PMB, to be loaded from a refinery or depot • transfer a minimum of three different materials, one of which must be a PMB, mixed and heated • transfer a minimum of three different materials, one of which must be a PMB, transferred to at least one roadside and one storage depot • calculation and recording of all details for the activities in the three previous dot points • compliance with the instructions for transferring listed in Austroads Bitumen Sealing Safety guide
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated

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	environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:

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	• working with others to undertake and conduct bitumen tanker operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, materials safety data sheet (MSDS) and diagrams or sketches • safe work procedures or equivalent related to the bitumen tanker operations • regulatory/legislative requirements pertaining to the bitumen tanker operations • instructions issued by authorised organisational or external personnel • relevant Australian standards and Austroads • AAPA advisory notes and code of practice • quality requirements including, but not be limited to: dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, bitumen hoses, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access

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	ways are clear, equipment or machinery is away from overhangs and refuelling sites, safe distance from excavations, secured from unauthorised movement and in accordance with legal requirements and the Austroads Bitumen Sealing Safety Guide instructions • safe operating procedures including recognising and preventing hazards associated with traffic, uneven/unstable terrain, poles, underground and overhead services, bridges, buildings, obstructions, structures, facilities, dangerous materials, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including hazards associated with hot bitumen products, uneven/unstable terrain, trees, fires, overhead and underground services, bridges, building, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, bitumen burns and may include organisational First Aid requirements, evacuation and refinery/depot safety procedures
Site may include:	• roadways • car parks • container yards • hard stands • manufacturer's depots and refineries
Tools and equipment may include:	• bitumen tankers • bitumen transfer hoses • rags, basic tool kits, • volume correction tables • earthing equipment • end shields • LPG gas bottles • lighters
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise

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	• vibration • dust and clean-up management
Bitumen tanker refers to:	• vehicles which are purpose built, self contained units and have the capability to load, unload, heat, transfer and circulate materials using their own pumping and heating systems • tankers which may be truck mounted, semi trailers, towed or any other purpose built mechanically operated tanker
Materials may include:	• bitumen • cutback bitumen and polymer modified binders (PMB) • kerosene and distillate • multi-grade bitumen • bitumen emulsions • adhesion agents

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS401B Apply the principles of asphalt paving and compaction

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of asphalt paving and compaction in the civil construction industry. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of asphalt paving and compaction tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, applying the principles of asphalt paving and compaction within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking ***asphalt paving and compaction*** 1.3 Ensure a ***job plan*** is available which makes best use of the available resources and meets the task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1 Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2 Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the tasks, to meet the specific task requirements 2.3 ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1 ***Monitor*** task performance to ensure it achieves the ***required outcomes*** 3.2 ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3 Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1 Complete and submit reports as required 4.2 Recommend changes to improve the safety, efficiency and effectiveness of the execution of asphalt paving and compaction tasks

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply the principles for the asphalt paving and compaction: • apply legislative, organisation and site requirements and procedures

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- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
- volumes
- tonnage required
- paver and roller speeds
- grades
- percentages
- areas
- resource consumption figures, including required supply rates
- provide recommendations for the improvement of the safe, effective and efficient execution of asphalt paving and compaction tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply the principles for the asphalt paving and compaction:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures

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- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- engineering survey principles
- communication requirements and procedures
- administrative requirements and procedures
- plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques
- resource requirements and procedures
- activities scheduling requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- road construction sequencing
- asphalt placement and compaction and related activities terminology
- set out requirements and procedures
- road geometry
- pavement drainage requirements
- works planning techniques
- monitoring methods
- characteristics, application and requirements and procedures for different types of asphalt
- asphalt mix design philosophy and test methods relating to paving and compaction
- straight line and intersection paving and compaction requirements and procedures

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

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EVIDENCE GUIDE	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application of the principles of asphalt paving and compaction • implementation of procedures and techniques for the safe, effective and efficient application of the principles of asphalt paving and compaction • working with others to plan, prepare and conduct asphalt paving and compaction • provision of clear and timely instruction and supervision by the individual of those involved in asphalt paving and compaction • evidence of the consistent successful application of the principles of asphalt paving and compaction
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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EVIDENCE GUIDE	
	• Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate's: • working with others to plan, prepare and conduct asphalt paving and compaction • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of asphalt paving and compaction
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications

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RANGE STATEMENT	
	• Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Specific task information and requirements may include:	• site meteorological data, including: • rainfall • humidity • temperature • wind • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • site engineering survey data • task drawings • sources of materials • types of asphalt • other organisations and contractors involved in the task or related tasks • coordination, timing and budgeting requirements
Asphalt paving and compaction may include:	• new pavement construction • existing pavement repair and maintenance
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements

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RANGE STATEMENT	
	• reporting requirements
Resources are to include:	• labour • plant, equipment and tools • material supply vehicles • construction materials, such as emulsion and asphalt • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

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Unit Sector(s)

Bituminous Surfacing

Competency field

Bituminous Surfacing

Co-requisite units

Not applicable.

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RIICBS402B Apply the principles for the application of bituminous sprayed treatmen

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision the application of bituminous sprayed treatment in the civil construction industry. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting for bituminous sprayed treatment tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, applying the principles for the application of bituminous sprayed treatment within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation is carried out for tasks	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking ***bituminous sprayed treatment*** task 1.3. Ensure a ***job plan***, is available which makes best use of the available resources and the task requirements
2. Ensure appropriate initiation for tasks is carried out	2.1. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the tasks, to meet the specific task requirements 2.2. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.3. ***Set out*** as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** bituminous sprayed treatment task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as require. 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of bituminous sprayed treatment tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- conduct and interpret the outcomes of visual assessments of completed works, including bleeding and stripping
- calculate quantities, including:
- volumes
- tonnages of materials
- sprayer forward speed
- materials' rates of application
- additive requirements
- areas
- resource consumption figures, including required supply rates

provide recommendations for the improvement of the safe, effective and efficient execution of tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply bituminous sprayed treatment:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- bituminous sprayed treatment plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of various bituminous sprayed treatment tasks, including:
- priming or pre-sealing
- normal bitumen sealing
- polymer modified binder sealing
- use of different aggregate sizes
- requirements for low, low-medium, high and very high traffic conditions
- pavement preparation requirements and procedures
- sprayer and spreader calibration requirements and procedures
- design rates of application of bituminous spray treatment materials
- bituminous sprayed treatment task resource requirements and procedures
- activities scheduling requirements and procedures
- bituminous sprayed treatment materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- spray sealing and related activities' terminology
- set out requirements and procedures
- road geometry
- ground surface treatment requirements and procedures e.g. proof rolling
- pavement drainage requirements
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application of bituminous sprayed treatment • implementation of procedures and techniques for the safe, effective and efficient application of bituminous sprayed treatment • working with others to plan, prepare and conduct the application of bituminous sprayed treatment • provision of clear and timely instruction and supervision by the individual of those involved in the application of bituminous sprayed treatment • evidence of the consistent successful application of bituminous sprayed treatment
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the application of bituminous sprayed treatment
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the application of bituminous sprayed treatment

Guidance information for	Consult the SkillsDMC User Guide for further

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assessment	information on assessment including access and equity issues.

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Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Specific task information and requirements may include:	• site meteorological data, including: • rainfall • humidity • temperature • wind • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related tasks • coordination, timing and budgeting requirements
Bituminous sprayed treatment may include:	• new pavement construction • existing pavement repair and maintenance • priming or pre-sealing • normal bitumen sealing • poly modified binder (PMB) sealing
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements

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	• task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • off-sets
Resources are to include:	• labour • plant, equipment and tools • materials delivery vehicles • construction materials, such as bitumen, sealing aggregates and additives • sub-contractor services
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

•
•

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Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS403B Apply the principles for the application of polymer modified binder

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of the application of polymer modified binder in civil construction industry. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of polymer modified binder selection and use are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, in the selection and use of polymer modified binders within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking ***polymer modified binder selection and use*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the tasks, to meet the ***specific task requirements*** 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** task performance to ensure it achieves the ***required outcomes***. 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of polymer modified binder selection and use

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
- volumes
- grades
- percentages
- areas
- resource consumption figures
- apply polymer modified binder selection processes
- provide recommendations for the improvement of the safe, effective and efficient execution of polymer modified binder selection and use

Required Knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply the principles for the

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selection and use of polymer modified binder:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- the types of polymer modified binders, their specifications, applications and constraints on their use
- polymer modified binder heating and handling methods
- polymer modified binder plant and equipment capabilities, selection and use
- plant, equipment and tools maintenance requirements and procedures
- polymer modified binder manufacturing processes
- operational techniques for the execution of polymer modified binder tasks
- polymer modified binder task resource requirements and procedures
- activities scheduling requirements and procedures
- polymer modified binder materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- polymer modified binder monitoring methods
- polymer modified binder sampling and testing methods
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- polymer application and related activities' terminology
- set out requirements and procedures
- road geometry
- ground surface treatment requirements and procedures e.g. proof rolling
- pavement drainage requirements
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application of the principles for the selection and use of polymer modified binder • implementation of appropriate procedures and techniques for the safe, effective and efficient selection and use of polymer modified binder • working with others to plan, prepare and conduct the selection and use of polymer modified binder • provision of clear and timely instruction and supervision by the individual of those involved in the selection and use of polymer modified binder • evidence of the consistent successful supervision of the selection and use of polymer modified binder
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksite may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the selection and use of polymer modified binder
	  • provision of clear and timely instruction and supervision by the individual of those involved in the selection and use of polymer modified binder

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Polymer modified binder selection and use may include:	• new pavement construction • existing pavement repair and rehabilitation • application in spray seal, asphalt and slurry surfacing
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management

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	team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • off-sets
Specific task requirements may include:	• site meteorological data, including: • rainfall • humidity • temperature • wind • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related tasks • coordination, timing and budgeting requirements
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate may include:	• written communication • oral communication

Unit Sector(s)

Bituminous Surfacing

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS404B Apply the principles for the selection and use of bituminous emulsion

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of bituminous emulsion selection and use in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of bituminous emulsion selection and use are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for bituminous emulsion selection and use within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking ***bituminous emulsion selection and use tasks*** 1.3. Ensure a ***job plan***, is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** bituminous emulsion selection and use performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise bituminous emulsion selection and use:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- apply bituminous emulsion selection processes
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
- volumes
- tonnage required
- paver and roller speeds
- grades
- percentages
- areas
- resource consumption figures, including required supply rates
- interpret bituminous emulsion properties and test results
- provide recommendations for the improvement of the safe, effective and efficient execution of bituminous emulsion selection and use

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Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise bituminous emulsion selection and use:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- types of bituminous emulsion, their specifications, applications and constraints on their use
- bituminous emulsion heating, handling and storage methods
- bituminous emulsion plant and equipment capabilities
- bituminous emulsion manufacturing processes
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of bituminous emulsion tasks
- bituminous emulsion task resource requirements and procedures
- activities scheduling requirements and procedures
- bituminous emulsion delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- bituminous emulsion monitoring methods
- bituminous emulsion sampling and testing methods
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- bituminous emulsion and related activities' terminology
- set out requirements and procedures
- road geometry
- ground surface treatment requirements and procedures e.g. proof rolling

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- pavement drainage requirements
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of bituminous emulsion selection and use • implementation of procedures and techniques for the safe, effective and efficient supervision of bituminous emulsion selection and use • working with others to plan, prepare and conduct bituminous emulsion selection and use • provision of clear and timely instruction and supervision by the individual of those involved in bituminous emulsion selection and use • evidence of the consistent successful supervision of bituminous emulsion selection and use
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct bituminous emulsion selection and use
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of bituminous emulsion selection and use

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Specific task information and requirements may include:	• site meteorological data, including: • rainfall • humidity • temperature • wind • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related tasks
Bituminous emulsion selection and use may include:	• new pavements sealing • existing pavement repair and rehabilitation • their use as tack coat for asphalt, as spray seal, cold mix and stabilisation binders and in slurry sealing • modification with polymers
Bituminous emulsion selection and use tasks may include:	• site preparation methods • load and haulage methods • heating, handling and storage methods • placement methods • distribution methods • surface finishing methods • line, grade and level control methods • compaction and water selection and use methods • sediment control methods • application as tack coat for asphalt, as spray seal, cold mix and stabilisation binders and in slurry sealing
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements

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	• sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision

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Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS405A Apply the principles for the application of slurry surfacing

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of slurry surfacing application tasks in the civil construction industry. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of slurry surfacing application tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, applying slurry surfacing within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking ***slurry surfacing application*** tasks 1.3. Ensure a ***job plan***, is available which makes best use of the available resources and meets the task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of slurry surfacing application task 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the task 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** slurry surfacing application task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practices or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of slurry surfacing application tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply slurry surfacing:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures
- providing recommendations for the improvement of the safe, effective and efficient execution of slurry surfacing application tasks

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Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply slurry surfacing:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- types of slurry mixes, their specifications, applications and constraints on their use
- slurry mix materials properties and specifications
- slurry mix design processes
- slurry manufacture processes by truck and application equipment
- slurry surfacing application plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of slurry surfacing application tasks
- activities scheduling requirements and procedures
- slurry surfacing application delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- slurry surfacing application monitoring methods
- slurry surfacing performance requirements
- slurry surfacing sampling and testing methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- slurry surfacing and related activities' terminology
- set out requirements and procedures
- road geometry
- ground surface treatment requirements and procedures e.g. proof rolling

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- pavement drainage requirements
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application of slurry surfacing • implementation of procedures and techniques for the safe, effective and efficient application of slurry surfacing • working with others to plan, prepare and conduct slurry surfacing • provision of clear and timely instruction and supervision by the individual of those involved in slurry surfacing • evidence of the consistent successful application of slurry surfacing
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct slurry surfacing
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the application of slurry surfacing

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Specific task information and requirements may include:	• site geological data • site geotechnical data • site meteorological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related tasks • coordination, timing and budgeting requirements
Slurry surfacing application may include:	• new pavement sealing • existing pavement repair and rehabilitation • its use in rut filling, shape core
Job plan may include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements

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	• occupational health and safety requirements • quality management requirements, including materials and product sampling and testing requirements • plant area traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • materials for the manufacture of cold mix • sub-contractor services
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Monitor may include:	• ongoing risk assessment • sampling and testing • process control information • observation and recording • general supervision
Required outcomes may include:	• slurry specifications requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate may include:	• written communication • oral communication

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Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS406A Apply the principles of pavement profiling using a profiler

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of pavement profiling using a profiler in the civil construction industry. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of pavement profiling using a profiler are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for pavement profiling using a profiler within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***pavement profiling using a profiler*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets the task requirements
2. Ensure appropriate initiation of task is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practices or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of pavement profiling using a profiler

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise pavement profiling using a profiler:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of pavement profiling, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures
- providing recommendations for the improvement of the safe, effective and efficient execution of pavement profiling using a profiler

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Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise pavement profiling using a profiler:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- pavement profiling using a profiler plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of pavement profiling using a profiler
- recycled materials requirements and procedures
- activities scheduling requirements and procedures
- pavement profiling materials delivery, removal and stockpiling requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- pavement profiling monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- pavement profiling and related activities' terminology
- set out requirements and procedures
- road geometry
- pavement drainage requirements
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for pavement profiling using a profiler • implementation of procedures and techniques for the safe, effective and efficient pavement profiling using a profiler • working with others to plan, prepare and conduct pavement profiling using a profiler • provision of clear and timely instruction and supervision by the individual of those involved in pavement profiling using a profiler • evidence of the consistent successful supervision of pavement profiling using a profiler
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct pavement profiling using a profiler
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of pavement profiling using a profiler

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• cold mix specifications
	• sources of materials and their specifications
	• other organisations and contractors involved in the task or related tasks
	• materials and product sampling and testing requirements
	• coordination, timing and budgeting requirements

Pavement profiling using a profiler
may include:
	• existing pavement repair and rehabilitation
	• removal or excavation of:
	  • existing subgrade
	  • granular loose material or surfacing
	  • asphalt

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	• concrete • trenching of asphalt or concrete • regulating surface profile • small areas to large works • clean up of finished surfaces to remove loose or dusty materials • side casting or loading into trucks
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including materials and product sampling and testing requirements • plant area traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • materials for the manufacture of cold mix • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives

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	• supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • sampling and testing • process control information • observation and recording • general supervision
Required outcomes may include:	• cold mix specifications requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS407A Apply the principles for the manufacture and delivery of hot mix asphalt

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of the manufacture and delivery of hot mix asphalt in the civil construction industry. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of the manufacture and delivery of hot mix asphalt are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, *to apply the principles for the manufacture and delivery of hot mix asphalt* within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***manufacture and delivery of hot mix asphalt*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets the manufacture and delivery requirements
2. Ensure appropriate initiation of manufacture and delivery	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the manufacture and delivery
3. Oversee the execution of manufacture and delivery	3.1. ***Monitor*** the hot mix asphalt manufacture and delivery performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to manufacturing and delivery practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of manufacture and delivery	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of the manufacture and delivery of hot mix asphalt

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply the principles for the manufacture and delivery of hot mix asphalt:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- select binders
- calculate quantities for the execution of the manufacture and delivery of hot mix asphalt, including:
  - volumes
  - tonnages
  - grades
  - percentages
  - resource consumption figures
- provide recommendations for the improvement of the safe, effective and efficient execution of the manufacture and delivery of hot mix asphalt

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Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply the principles for the manufacture and delivery of hot mix asphalt:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures, including aggregates, binders and product
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- hot mix asphalt manufacturing and delivery plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- hot mix delivery truck loading requirements and procedures
- operational techniques for the execution of the manufacture and delivery of hot mix asphalt
- hot mix asphalt raw materials and product handling, storage, moisture and temperature control requirements and procedures
- hot mix asphalt manufacturing and delivery resource requirements and procedures
- hot mix asphalt raw materials and product delivery requirements and procedures
- hot mix asphalt manufacturing sampling, testing and production monitoring methods
- activities scheduling requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- engineering survey principles
- mentoring techniques
- estimating principles
- road construction sequencing
- asphalt manufacture and delivery and related activities' terminology
- works planning techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the manufacture and delivery of hot mix asphalt • implementation of procedures and techniques for the safe, effective and efficient manufacture and delivery of hot mix asphalt • working with others to plan, prepare and conduct the manufacture and delivery of hot mix asphalt • provision of clear and timely instruction and supervision by the individual of those involved in the manufacture and delivery of hot mix asphalt • evidence of the consistent successful manufacture and delivery of hot mix asphalt
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the manufacture and delivery of hot mix asphalt
	  • provision of clear and timely instruction and supervision by the individual of those involved in the manufacture and delivery of hot mix asphalt

Guidance information for	Consult the SkillsDMC User Guide for further

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assessment	information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• asphalt product specifications
	• sources of materials and their specifications
	• other organisations and contractors involved in the task or related tasks
	• materials and product sampling and testing requirements
	• coordination, timing and budgeting requirements

Manufacture of hot mix asphalt may include:	• fixed and mobile batch plants • fixed and mobile drum mixing plants • dense graded asphalt (DGA) • stone mastic asphalt (SMA) • open graded asphalt (OGA) • fine gap graded (FGG)

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	• bitumen and modified binders
Delivery of hot mix asphalt may include:	• site preparation • site set out • plant set up • delivery and product vehicle access and control • raw materials receipt, acceptance and storage • use of recycled asphalt • raw materials loading into the plant • binder and product temperature control • product batching or proportioning and mixing • process control • product loading and despatch • use of release agents in delivery trucks • pollution control methods • sediment control methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including materials and product sampling and testing requirements • plant site traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • materials for the manufacture of asphalt • highway haulage vehicles • sub-contractor services
Instructions are to include:	• briefings and handovers • work orders

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	• toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Monitor is to include:	• ongoing risk assessment • sampling and testing • process control information • observation and recording • general supervision
Required outcomes may include:	• asphalt mix specifications requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS408A Apply the principles for the manufacture of cold mix

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of the manufacture of cold mix in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of the manufacture of cold mix are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, to apply the principles of the manufacture of cold mix within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***manufacture of cold mix*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets the task requirements.
2. Ensure appropriate planning and preparation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the tasks, to meet the ***specific task requirements***
3. Oversee the execution of tasks	3.1. ***Monitor*** the manufacture of cold mix performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply the principles of the manufacture of cold mix:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project geological data
- identify rock types
- interpret meteorological data
- interpret material properties and test results, including compaction test results
- interpret project geotechnical data
- interpret project hydrological data
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - tonnage required
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret cold mix materials and product properties and test results
- provide recommendations for the improvement of the safe, effective and efficient execution of the manufacture of cold mix

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit,

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particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply the principles of the manufacture of cold mix:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures, including aggregate, binder and product sampling an testing
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- cold mix manufacturing plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- binder and product handling and storage requirements and procedures
- cold mix delivery truck loading requirements and procedures
- operational techniques for the execution of the manufacture of cold mix
- cold mix manufacturing resource requirements and procedures
- cold mix manufacturing, sampling testing and production monitoring methods
- cold mix raw materials and product delivery requirements and procedures
- activities scheduling requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- cold mix manufacture and related activities' terminology
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the manufacture of cold mix • implementation of procedures and techniques for the safe, effective and efficient manufacture of cold mix • working with others to plan, prepare and conduct the manufacture of cold mix • provision of clear and timely instruction and supervision by the individual of those involved in the manufacture of cold mix • evidence of the consistent successful manufacture of cold mix
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the manufacture of cold mix
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the manufacture of cold mix

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• cold mix specifications
	• sources of materials and their specifications
	• other organisations and contractors involved in the task or related tasks
	• materials and product sampling and testing requirements
	• coordination, timing and budgeting requirements

Cold mix manufacture may include:	• fixed and mobile batch plants • fixed and mobile drum mixing plants

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	• cutback bitumen binder • bituminous emulsion binder • polymer modified binders
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including materials and product sampling and testing requirements • plant area traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • materials for the manufacture of cold mix • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Monitor is to include:	• ongoing risk assessment • sampling and testing

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	• process control information • observation and recording • general supervision
Required outcomes may include:	• cold mix specifications requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS409A Apply the principles for the manufacture of polymer modified binder

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of the manufacture of polymer modified binder in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of the manufacture of polymer modified binder are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for the manufacture of polymer modified binder within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***manufacture of polymer modified binder*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate planning and preparation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of tasks, to meet the specific task requirements
3. Ensure appropriate planning and preparation of tasks is carried out	3.1. ***Monitor*** the manufacture of polymer modified binder task performance to ensure it achieves the ***required outcome*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise of the manufacture of polymer modified binder:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
- volumes
  - tonnage required
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret polymer modified binder properties and test results,
- provide recommendations for the improvement of the safe, effective and efficient execution of the manufacture of polymer modified binder

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit,

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particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise of the manufacture of polymer modified binder:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- polymer modified binder manufacturing plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of the manufacture of polymer modified binder
- polymer modified binder manufacture resource requirements and procedures
- activities scheduling requirements and procedures
- polymer modified binder raw materials and product delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- polymer modified binder manufacture monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of the manufacture of polymer modified binder • implementation of procedures and techniques for the safe, effective and efficient supervision of the manufacture of polymer modified binder • working with others to plan, prepare and conduct the manufacture of polymer modified binder • provision of clear and timely instruction and supervision by the individual of those involved in the manufacture of polymer modified binder • evidence of the consistent successful supervision of the manufacture of polymer modified binder
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the manufacture of polymer modified binder
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the manufacture of polymer modified binder

Guidance information for	Consult the SkillsDMC User Guide for further

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assessment	information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Manufacture of polymer modified binder may include:	• site preparation methods • traffic management methods • load haulage methods • manufacture methods

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	• pollution control methods • product dispatch methods • sediment control methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • material supply vehicles • construction materials, such as emulsion and asphalt • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Monitor is to include:	• ongoing risk assessment • engineering survey

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	• sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS410A Apply the principles for the manufacture of bituminous emulsion

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of the manufacture of bituminous emulsion in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of the manufacture of bituminous emulsion are carried out in accordance with the accepted industry principles

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for the manufacture of bituminous emulsion within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***manufacture of bituminous emulsion*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the tasks, to meet the specific task requirements
3. Oversee the execution of tasks	3.1. ***Monitor*** the manufacture of bituminous emulsion performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise the manufacture of bituminous emulsion

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project geological data
- identify rock types
- interpret meteorological data
- interpret material properties and test results, including compaction test results
- interpret project geotechnical data
- interpret project hydrological data
- interpret project engineering survey information
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - tonnage required
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret the manufacture of bituminous emulsion properties and test results
- provide recommendations for the improvement of the safe, effective and efficient execution of the manufacture of bituminous emulsion

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used.

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This includes knowledge of the following, as required to supervise the manufacture of bituminous emulsion:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- bituminous emulsion manufacturing plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of the manufacture of bituminous emulsion
- bituminous emulsion resource requirements and procedures
- activities scheduling requirements and procedures
- bituminous emulsion raw materials and product delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- bituminous emulsion manufacturing monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- manufacture of bituminous emulsion and related activities' terminology
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of the manufacture of bituminous emulsion • implementation of procedures and techniques for the safe, effective and efficient supervision of the manufacture of bituminous emulsion • working with others to plan, prepare and conduct the manufacture of bituminous emulsion • provision of clear and timely instruction and supervision by the individual of those involved in the manufacture of bituminous emulsion • supervision of the manufacture of bituminous emulsion
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the manufacture of bituminous emulsion
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the manufacture of bituminous emulsion

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Manufacture of bituminous emulsion may include:	• site preparation methods • traffic management methods • load and haulage methods

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	• manufacture methods • pollution control methods • product dispatch methods • sediment control methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • material supply vehicles • construction materials, such as emulsions • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Monitor is to include:	• ongoing risk assessment • engineering survey

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	• sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICBS411A Apply the principles for the manufacture of slurry surfacing

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of the manufacture of slurry surfacing in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of the manufacture of slurry surfacing are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for the manufacture of slurry surfacing within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***manufacture of slurry surfacing*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of tasks, to meet the specific task requirements
3. Oversee the execution of tasks	3.1. ***Monitor*** slurry surfacing manufacturing performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise the manufacture of slurry surfacing:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project geological data
- identify rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - tonnage required
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret the manufacture of slurry surfacing properties and test results
- provide recommendations for the improvement of the safe, effective and efficient execution of the manufacture of slurry surfacing

Required knowledge

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Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise the manufacture of slurry surfacing:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- slurry surfacing manufacturing plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of the manufacture of slurry surfacing
- slurry surfacing manufacturing resource requirements and procedures
- activities scheduling requirements and procedures
- slurry surfacing raw materials and product delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- slurry surfacing manufacturing monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- slurry surfacing manufacture and related activities' terminology
- pavement drainage requirements
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of the manufacture of slurry surfacing • implementation of procedures and techniques for the safe, effective and efficient supervision of the manufacture of slurry surfacing • working with others to plan, prepare and conduct the manufacture of slurry surfacing • provision of clear and timely instruction and supervision by the individual of those involved in the manufacture of slurry surfacing • evidence of the consistent successful supervision of the manufacture of slurry surfacing
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the manufacture of slurry surfacing
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the manufacture of slurry surfacing

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Manufacture of slurry surfacing may include:	• site preparation methods • traffic management methods • load and haulage methods • manufacture methods

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	• pollution control methods • product dispatch methods • sediment control methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • material supply vehicles • construction materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing

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	• observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCM201A Carry out measurements and calculations

Modification History

Not applicable.

Unit Descriptor

This unit covers carrying out measurements and calculations in the civil construction industry. It includes: planning and preparation; performing measurements and calculations; and estimating approximate quantities.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Confirm and apply work instructions 1.3. Select measuring and calculating equipment to carry out tasks that are consistent with the requirements of the job, and check them for serviceability and any faults and rectify or report faults
2. Perform measurements	2.1. Select and apply method of obtaining the ***measurement*** 2.2. Obtain measurements using a rule or tape, accurate to 1mm 2.3. Confirm and record measurements
3. Perform calculations	3.1. Select appropriate ***calculation*** method for achieving the required result 3.2. Correctly calculate material quantities for the project using the appropriate factors 3.3. Confirm and record results
4. Estimate approximate quantities	4.1. Take calculations for determining material requirements 4.2. Select appropriate formulas for calculating quantities 4.3. Estimate quantities from the calculations taken 4.4. Calculate, confirm and record material quantities for the project within enterprise tolerances

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to carry out measurements and calculations:

- locate, interpret and apply relevant information
- comply with site safety plan, OHS regulations and State/Territory legislation applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- complete measurements, calculations and determination of quantities for at least three different projects of varying complexity
- calculate each of the following using a realistic civil construction task for example:
  - length
  - perimeter
  - circumference
  - area
  - volume
  - number
  - ratio
  - percentage
  - conversion of metres to millimetres and millimetres to metres
  - measure using a rule or tape measure five separate tasks within 1mm accuracy
- use operational tools and equipment safely and effectively
- communicate and work effectively and safely with others

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to carry out measurements and calculations:

- site and equipment safety requirements
- measuring, calculating, geometry and determination of quantities
- tolerances
- calculators
- company procedures
- project quality requirements
- communication devices
- processes for care of measuring equipment

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- civil construction terminology
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for carrying out measurements and calculations • implementation of requirements, procedures and techniques for the safe, effective and efficient carrying out measurements and calculations • working with others to undertake and complete measurements and calculations that meet all of the required outcomes • consistent timely completion of measurements and calculations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace context. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete measurements and calculations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Measurement may include the determination of:	• length, area, weight, height, width, depth, volume, mass, scales, perimeters, quantities, numbers, grade
Calculations may be performed manually and with the aid of a calculator and may include:	• addition, subtraction, multiplication and division • length, perimeter, circumference, area, volume, number, ratio, percentage • conversions, such as of metres to millimetres and millimetres to metres

Unit Sector(s)

Civil Works (Common Units)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCM202A Identify, locate and protect underground services

Modification History

Not applicable.

Unit Descriptor

This unit covers the identification, location and protection of underground services in the civil construction industry. It includes planning and preparing, locating underground services, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task 1.6. Obtain and prepare information for search requirements prior to making contact with the service provider (dial before you dig) 1.7. Determine location, alignment direction, level and grade of services and/or utilities from the plans and location details
2. Locate underground services	2.1. Obtain details of ***services and utilities*** location from the site owners 2.2. Determine emergency numbers, contact details and procedures for types and ***owners of the services and/or utilities*** 2.3. Contact owners of the services and/or utilities to obtain plans and location details 2.4. Select appropriate plant/equipment, and search for services and/or utilities on which construction may impact 2.5. Use visual or physical means to search for services and/or utilities prior to commencing construction 2.6. Move, protect and support services/utilities from the construction process in conjunction with the service and/or utility owner 2.7. Report any damage to services/utilities

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	during physical determination (potholing) that occurs during search to asset owner in accordance with asset owners' requirements
3. Clean up	3.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 3.2. Clean, check, maintain and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to identify, locate and protect underground services:

- apply legislative, organisation and site requirements and procedures for identifying, locating and protecting underground services
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to identify, locate and protect underground services:

- site and equipment safety requirements
- service and utility providers
- types of services and utilities
- construction principles
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheet and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for identifying, locating and protecting underground services • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the identification, location and protection of underground services • working with others to undertake and complete the identification, location and protection of underground services in a way that meets all of the required outcomes • consistent timely completion of the identification, location and protection of underground services that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the identification, location and protection of underground services

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • project safety plan • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

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	• emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• any site where a vertical or horizontal structure is intended for construction
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• shovels • picks • tip trucks • excavators • backhoes • front end loaders
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Services and utilities may include:	• water • power • gas • oil • communications • drains • stormwater • sewerage
Owners of services and utilities	• telecommunication companies • energy companies

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may include:	• government agencies • gas companies or authorities • water authorities • local governments

Unit Sector(s)

Civil Works (Common Units)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCM203A Read and interpret plans and specifications

Modification History

Not applicable.

Unit Descriptor

This unit covers the reading and interpreting of plans and specifications in the civil construction industry. It includes: identifying types of drawings and their functions; recognising amendments and commonly used symbols and abbreviations; locating and identifying key features on a site plan; and reading and interpreting job specifications.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify types of drawings and their functions	1.1. Identify the main types of plans and ***drawings*** used in the industry 1.2. Identify the key functions of each type of drawing 1.3. Recognise and adhere to quality requirements of company operations 1.4. Identify environmental controls from the job plans, specifications and environmental plan
2. Recognise amendments	2.1. Check title panel to verify latest amendments to drawing 2.2. Check amendments to ***specifications*** to ensure currency of information
3. Recognise commonly used symbols and abbreviations	3.1. Recognise civil construction symbols and abbreviations 3.2. Locate and correctly interpret legend on project drawings, symbols and abbreviations
4. Locate and identify key features on a site plan	4.1. Achieve orientation of the plan with the site 4.2. Identify and locate ***key features*** of the site 4.3. Gain access to site and identify services, main features, contours and datum
5. Read and interpret job specifications	5.1. Job specifications are identified from drawings, notes and descriptions 5.2. Standards of work, finishes and tolerances are identified from the project specifications 5.3. Material attributes are identified from specifications

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to read and interpret plans and specifications:

- apply legislative, organisation and site requirements and procedures
- speaking clearly and directly, listening carefully to instructions and information
- applying teamwork to a range of situations, particularly in a safety context
- solving problems such as recognising clear discrepancies between the documents (map, plan, specifications) and the actual site and taking action to correct these
- showing initiative in adapting to changing work conditions or contexts particularly when working across a variety of work areas
- managing time, particularly in organising priorities and planning work
- taking responsibility for self organisation of work priorities
- applying mathematical skills, including basic calculations of heights, areas, volumes and grades
- showing a willingness to learn and to use a range of mediums to learn
- using workplace technology including the use of communication systems and the reporting/recording of results

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to read and interpret plans and specifications:

- features of plans and elevations including direction, scale, key, contours, symbols and abbreviations
- commonly used civil construction symbols and abbreviations
- the processes for application of scales in plan preparation/interpretation
- techniques for orienting/confirming the orientation of a plan
- key features of formal job specifications
- site and equipment safety requirements
- project quality requirements
- basic calculations of heights, areas, volumes and grades
- civil construction terminology
- drawing conventions
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for reading and interpreting of plans and specifications • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the reading and interpreting of plans and specifications • working with others to undertake and complete the reading and interpreting of plans and specifications that meet all of the required outcomes • consistent timely completion of the reading and interpreting of plans and specifications that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the reading and interpreting of plans and specifications

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Drawings may include:	• site plans • locality plans • cross sectional plans • longitudinal plans • structural detail and specification providing illustrations and dimensions and project plans • drawings • specifications • illustrations • dimensions and notes

Specifications may include:	• materials and quality of work
	• quality assurance
	• nominated sub-contractors
	• provision of site access/facilities
	• details relating to performance including:
	  • standards of work
	  • tolerances
	  • material types
	  • characteristics
	  • treatments and finishes

Key features may include:	• type of product/service • quantities • characteristics • sizes • pattern dimension • location • surfaces and compatibility

Unit Sector(s)

Civil Works (Common Units)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCM204A Place and fix reinforcement materials

Modification History

Not applicable.

Unit Descriptor

This unit covers the placement and fixing of reinforcement materials in the civil construction industry. It includes planning and preparing, preparing for reinforcement placement, placing and fixing reinforcement, checking reinforcement prior to concrete pour, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage***/barricade requirements from the project traffic management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Check stock of ***reinforcement materials*** for correct type and quantity against reinforcement schedule and details in plans/specifications 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted
2. Prepare for reinforcement placement	2.1. Check formwork for completion and conformity to receive reinforcement 2.2. Cut and bend reinforcement bars to required set out and plans/specifications 2.3. Tie bars to designed configuration 2.4. Cut reinforcement sheets to required sizes 2.5. Attach stiffening rods to panels as required to facilitate handling processes 2.6. Locate bar chairs/spacers to requirements of reinforcement schedule and plans/specifications
3. Place and fix reinforcement	3.1. Place fabric reinforcement sheets into position in accordance with engineer's drawings and specifications 3.2. Locate and position reinforcement bars 3.3. Locate and place reinforcement using bar chairs, ligatures and spacers 3.4. Support and secure reinforcement material is supported and secured into position

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	3.5. Secure cast-in items to reinforcement 3.6. Cover and protect ends of protruding reinforcement material
4. Check reinforcement prior to concrete pour	4.1. Check location and position of reinforcement and fixing ties to reinforcement for accuracy 4.2. Check depth of coverage, clearance, spacing and overlap of reinforcement material in accordance with engineer's drawings/job specifications
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to place and fix reinforcement materials:

- apply legislative, organisation and site requirements and procedures for placing and fixing reinforcement materials
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions
- read engineering drawings

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to place and fix reinforcement materials:

- steel reinforcement characteristics
- concrete characteristics and properties
- concreting principles
- structural technology
- formwork
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for placing and fixing reinforcement materials • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the placing and fixing of reinforcement materials • working with others to undertake and complete the placing and fixing reinforcement materials in a way that meets all of the required outcomes • consistent timely completion of the placing and fixing of reinforcement materials that safely, effectively and efficiently meets the required outcomes • the placement and fixing of reinforcement materials to specification on a minimum of three different jobs and involving deformed bars, rods and mesh sheets
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the placing and fixing of reinforcement materials

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

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	• emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation

Site may include:	• steelfixing involving reinforcing concrete for:
	  • foundations
	  • pits
	  • slabs
	  • columns
	  • walls
	  • stairs
	  • plinths
	  • kerbs
	  • gutters
	  • pathways
	  • hard standings

Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Tools and equipment may include:	• bolt cutters • wire nippers • tie wire reels • measuring tapes/rules • reinforcement benders • mesh guillotines • a range of general hand and power tools • MMAW machines • oxy acetylene set • cutting attachments
Reinforcement materials may include:	• wire ties • ligatures • spacers/spreaders assemblies • deformed bars • plain rods • bar chairs • mesh sheets of plain bars • mesh sheets of deformed bars

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	• scaffolding components • pipe sections • structural steel sections

Unit Sector(s)

Civil Works (Common Units)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCM205A Carry out manual excavation

Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of manual excavation in the civil construction industry. It includes preparing for work, digging small excavation by hand, completing and isolating the excavation, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Dig small excavations by hand	2.1. Confirm the location and specifications of the intended excavation on the ground before commencing work 2.2. Identify service markers or taped areas 2.3. Determine or confirm location of ***underground services*** to avoid damage or interference 2.4. Use hand tools correctly to dig post holes, small pits and trenches safely and to the required dimensions 2.5. Undertake trench collapse prevention procedures, where excavation is in unstable ground 2.6. Place barricades around the ***excavation***
3. Complete and isolate the excavation	3.1. Clean loose material out of excavation using hand tools 3.2. Check excavation for confirmation with the specification or work instruction
4. Clean up	4.1. Clear loose material away from the edge of excavation 4.2. Clear work area and dispose of or recycle materials in accordance with project environmental management plan

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	4.3. Clean, check, maintain and store tools and equipment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to carry out manual excavation:

- apply legislative, organisation and site requirements and procedures for carrying out manual excavation
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to carry out manual excavation:

- types, uses, limitations and maintenance requirements of manual excavation tools
- basic principles of soil technology for civil works
- basic trench collapse prevention techniques including benching and battering
- site safety requirements
- site isolation and traffic control responsibilities and authorities
- project quality requirements
- civil construction terminology
- concreting tools, plant and equipment
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for carrying out manual excavation • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of manual excavation • working with others to undertake and complete the manual excavation in a way that meets all of the required outcomes • consistent timely completion of manual excavation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the manual excavation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site conditions may include:	• dry • wet • mud • dust • varying day/night visibility
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• picks • crow-bars • shovels • hand augers • string lines • pegs • levels • tape measures • jack hammers • scabblers
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Underground services may include:	• power • water • gas • telephone

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	• sewerage
Excavations may include:	• trenches • post-holes • pits • levelling of the work area

Materials may include:	• clays
	• silts
	• stone
	• gravel
	• mu
	• rock
	  • metamorphic
	  • igneous
	  • sedimentary
	• sand
	• topsoil

Unit Sector(s)

Civil Works (Common Units)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCM206A Support plant operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the support of plant operations in the civil construction industry. It includes planning and preparing, identifying and protecting services, supporting the operators, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project traffic management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Identify and protect services	2.1. Locate services from plan 2.2. Locate service markers during machine operations and advise operators of location to prevent damage 2.3. Expose and mark services, and erect barriers to prevent damage
3. Support the operators	3.1. Notify operator of unsafe conditions or potential damage to property 3.2. Check pegs and levels and give advice to machine operator for compliance with job requirements 3.3. Deliver or relocate ***materials*** to correct location and check them for quality and quantity 3.4. Direct delivery ***plant***/trucks to required location for loading/unloading 3.5. Provide guidance to assist machine operator with spreading of materials to specified levels 3.6. Provide guidance to assist machine operator with compaction of materials in layers 3.7. Finish excavation jobs by hand to specifications

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	3.8. Report damage to access roads to supervisor
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.2. Clean, check, maintain and store tools and equipment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to support plant operations:

- apply legislative, organisation and site requirements and procedures for supporting plant operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to support plant operations:

- plant types, characteristics, technical capabilities and limitations
- basic soil types and characteristics
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for support plant operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of plant operations support • working with others to undertake and complete the plant operations support in a way that meets all of the required outcomes • consistent timely completion of plant operations support that safely, effectively and efficiently meets the required outcomes • the completion of four standard shifts requiring the spotting for a minimum of two separate activities involving excavation, fill, spreading of imported material and trimming
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the plant operations support

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Tools and equipment may include:	• tape measure • string line • plumb bob • batter boards • levelling devices/instruments • two way radio • barriers/barricades
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management

Materials may include:	• clays
	• silts
	• stone
	• gravel
	• mud
	• rock
	  • metamorphic
	  • igneous
	  • sedimentary
	• sand
	• topsoil
	• bituminous mixes

Plant may include:	• trucks • dozers • graders • scrapers • tractors • excavators • front end loaders • rollers • water carts • pavers

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Unit Sector(s)

Civil Works (Common Units)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCM207A Spread and compact materials manually

Modification History

Not applicable.

Unit Descriptor

This unit covers the manual spreading and compacting of materials in the civil construction industry. It includes planning and preparing, conducting compaction machine operational checks, spreading and compacting materials, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project traffic management plan 1.4. Select plant and ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Conduct compaction machine operational checks	2.1. Carry out pre-start, start-up and shutdown procedures in accordance with manufacturer's and/or site specific requirements 2.2. Check machine controls and functions for serviceability, and rectify or report any faults
3. Spread and compact materials	3.1. Conduct ***basic field identification test*** and identify material type 3.2. Direct trucks to required location for loading/dumping 3.3. Direct delivered/relocated ***materials*** to correct location 3.4. Check manufactured material for segregation 3.5. Conduct field test to ensure material moisture is suitable 3.6. Direct machine operator to spread materials to specified levels 3.7. Finish materials by hand to specified levels 3.8. Consolidate materials into layers by hand held mechanical compaction equipment 3.9. Conduct field test to ensure compaction has

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	been achieved in restricted locations
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.2. Clean, check, ***maintain*** and store tools and equipment t

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to spread and compact materials manually:

- apply legislative, organisation and site requirements and procedures for manually spreading and compacting materials
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to spread and compact materials manually:

- basic principles of soil technology for civil works
- basic soil compaction theory including the effects of moisture and mechanical interlock
- hand operated mechanical compaction machine types, characteristics, technical capabilities and limitations
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- project quality requirements
- civil construction terminology
- practical field tests for moisture content, shrinkage and compaction
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for manually spreading and compacting materials • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the manual spreading and compacting of materials • working with others to undertake and complete the manual spreading and compacting of materials that meets all of the required outcomes • consistent timely completion of manual spreading and compacting of materials that safely, effectively and efficiently meets the required outcomes • a minimum of three separate operations requiring the hand spreading and the mechanical (hand operated) compaction of two different material types to site specification
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete spreading and compacting materials manually

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Tools and equipment may include:	• rakes • shovels • mechanical compaction equipment
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Basic field identification test for materials may include:	• the visual and feel identification test for material type identification • the visual identification test for material segregation • the visual and feel identification test for material moisture content • project specification testing requirements for material compaction • speedie moisture content test
Materials may include:	• soils • aggregates • clay • sand • gravel • stabilised material • pre mix • cold mix • hot mix
Maintain may include:	• cleaning • authorised servicing • monitoring, recording and reporting of faults • conduct of authorised minor replacements

Unit Sector(s)

Civil Works (Common Units)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCM208A Carry out basic levelling

Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of basic levelling in the civil construction industry. It includes planning and preparing, establishing offsets for civil works, setting up and using levelling device, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project traffic management plan 1.4. Select plant, ***tools and equipment*** to carry out ***levelling tasks*** consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. ***Check levelling equipment*** for serviceability within specified tolerances, and report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Establish offsets for civil works	2.1. Establish offset and recovery pegs from survey controls to specified plans and drawings to meet project requirements 2.2. Re-establish earthwork and pavement control lines from offsets and/or recovery pegs in accordance with plans, drawings and specifications 2.3. Establish drainage offsets from survey control
3. Set up and use levelling device	3.1. Identify ***heights*** to be transferred/established from project plans or instructions 3.2. Set up and use levelling instruments correctly in accordance with standard operating procedures and manufacturer's guidelines 3.3. Transfer heights from the known to the required 3.4. Document results of ***levelling procedure*** and close them out to organisational

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	requirements
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.2. Clean, check, maintain and store tools and equipment t

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to carry out basic leveling:

- apply legislative, organisation and site requirements and procedures for carrying out basic levelling
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions
- apply basic mathematical techniques associated with levelling

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to carry out basic leveling:

- basic civil construction processes
- civil construction plan, symbols and construction terminology
- levelling device types, characteristics, technical capabilities and limitations
- levelling techniques related to essential tasks
- basic mathematical techniques associated with levelling
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for carrying out basic levelling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of basic levelling • working with others to undertake and complete the basic levelling in a way that meets all of the required outcomes • consistent timely completion of basic levelling that safely, effectively and efficiently meets the required outcomes • the conduct of a minimum of three different levelling tasks, at least one utilising an automatic level. One of the tasks must include closed traverse utilising either the height of instrument or rise and fall method of reduction • the conduct of a two peg test with an automatic level, to confirm instrument meets manufacturer's tolerances • the accurate recording of the results of each levelling procedure to organisational requirements
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.

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	• Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the basic levelling

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation

Tools and equipment may include:	• levelling devices including:
	• spirit levels
	  • laser levels
	  • string lines
	  • tape measures
	  • automatic levels
	  • survey pegs
	  • levelling staffs
	  • plumb bobs
	  • optical square
	  • inclinometers
	  • batter pegs/boards
	• wooded/steel pegs
	• straight edges
	• hammers
	• chalk line

Levelling tasks may include:	• transferring levels/heights for formwork • earthwork • roadwork • pipework • drainage works • positioning offsets • recovery pegs

Check levelling equipment may include:	• tolerance checks including:
	  • two peg test for automatic level
	  • reverse readings for spirit level

Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Heights may be indicated by:	• drawing/sketch • verbal or written instructions • datum/survey peg • chalk or nail mark

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	• mark on vertical surface
Levelling procedure may include:	• open or closed traverse utilising height of instrument • rise and fall methods of reduction

Unit Sector(s)

Civil Works (Common Units)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCM209A Carry out concrete work

Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of concrete work in the civil construction industry. It includes planning and preparing, selecting materials, setting out for concrete work, constructing and fitting reinforcement, erecting formwork, carrying out concrete work, stripping formwork, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select ***plant***, ***tools and equipment*** to carry out ***concreting work*** consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Select materials	2.1. Determine location of steel reinforcement and formwork from drawings and reinforcement schedule 2.2. Check reinforcement against drawings and specifications 2.3. Select ***formwork*** components/***materials*** consistent with job 2.4. Select and use fixing/fasteners
3. Set out for concrete work	3.1. Set string lines accurately from existing pegs 3.2. Check grades to ensure correct fall 3.3. Identify and protect services to prevent damage
4. Construct and fit reinforcement	4.1. Cut and bend ***reinforcing fabric and bars*** as required by project drawings and specifications 4.2. Tie/fix fabric and bars to configuration 4.3. Attach stiffening rods to panels as required to facilitate handling 4.4. Locate reinforcement material in formwork, and place it on bar chairs/spacers as determined from

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	drawings, noting clearance from formwork 4.5. Locate and secure ***cast-ins***
5. Erect formwork	5.1. Clear work area and prepare surface for safe erection of ***formwork*** 5.2. Set out formwork to requirements of drawings and specifications 5.3. Assemble/erect and brace formwork 5.4. Position expansion joints to specification and to relevant Australian standard 5.5. Position dowel joints 5.6. Remove debris, sawdust and other waste material from formwork 5.7. Apply release agent to manufacturer's specifications
6. Carry out concrete work	6.1. ***Place concrete*** correctly to specified levels and grades and to ***avoid segregation*** 6.2. Compact concrete using immersion vibrator or other specified method 6.3. Screed, ***finish*** and apply ***curing*** process to concrete 6.4. Cover and protect concrete surface adequately
7. Strip formwork	7.1. Remove edge boxing and braces sequentially 7.2. Denail, clean, store or stack timber components 7.3. Clean, oil, store or stack steel components 7.4. Discard damaged formwork components after stripping 7.5. Clean screens safely before movement, where applicable
8. Clean up	8.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 8.2. Clean, check, maintain and store tools and equipment t

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to carry out concrete work:

- apply legislative, organisation and site requirements and procedures for carrying out concrete work
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to carry out concrete work:

- site and equipment safety requirements
- steel reinforcement characteristics
- concrete characteristics and properties
- concreting principles
- structural technology
- formwork
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheet and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for carrying out concrete work • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of concrete work • working with others to undertake and complete concrete work that meets all of the required outcomes • consistent timely completion of concrete work that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete concrete work

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation

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Site locations may include:	• any rural or urban civil construction project
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant may include:	• pre-mix truck • crane • kibble • wheelbarrow
Tools and equipment may include:	• floats • trowels • edging tools • screeds • wheelbarrows • tremmies • chutes • vibrators • rakes • short handle shovels • rods • hammers • hoses • buckets • sponges • tarpaulins • curing agent applicators • kibbles • nips • bolt cutters • reinforcement benders • mesh guillotines • steam generators

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	• shutters • brushes
Concreting work may include:	• site slabs and may include footpaths • repairing of kerb and channel • gully pits • culvert end structures • foundations • head walls • wing walls • aprons • plinths • drains • hardstands
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Formwork may include:	• steel shutters • timber • plywood
Materials may include:	• concrete • steel reinforcing • formwork components • curing agents • plastic membranes • water • sand
Reinforcing fabric and bars may include:	• mesh • reinforcement bars • ligatures
Cast-ins may include:	• services and fixtures tied to the reinforcement
Formwork may include:	• steel shutters • timber • plywood
Place concrete may include using:	• wheelbarrows • pumping equipment • kibble

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	• chute • tremmie • truck placed • shovelling • vibrating

Avoiding segregation may include:	• minimising the height of a vertical drop including:
	  • using a tremmie
	  • using the flexible hose of a concrete pump

Finish may include:	• steel trowel • mechanical trowelling machine • broom finished, • wood float • bull float • brushed
Curing may include:	• flooding • coating with a membrane • applied moisture • steam • curing agents • plastic sheeting

Unit Sector(s)

Civil Works (Common Units)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCM210A Install trench support

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of trench support in the civil construction industry. It includes planning and preparing, installing trench shoring, removing trench shoring, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***traffic control signage*** requirements from the project traffic management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Install trench shoring	2.1. Communicate with plant operator to ensure the ***excavation*** of ***trenches*** complies with site plan, line and depth 2.2. Determine and prepare ***shoring method*** 2.3. Set out positioning of shoring 2.4. Position or ***erect shoring*** within the trench 2.5. Secure shoring in position and check to ensure structural conformity with regulations 2.6. Clean out excavation out by hand to job requirements 2.7. Provide ladders for access and egress to site safety plan requirements
3. Remove trench shoring	3.1. Release jacking mechanisms and remove ladders 3.2. Check shoring and prepare it for lifting from the trench 3.3. Remove shoring from trench and store it on site
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.2. Clean, check, maintain and store tools and

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	equipment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install trench shoring:

- apply legislative, organisation and site requirements and procedures for installing trench shoring
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install trench support:

- site and equipment safety requirements
- excavation techniques
- shoring methods and systems
- working in confined spaces
- construction techniques
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing trench support • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of trench support installation • working with others to undertake and complete the installation of trench support in a way that meets all of the required outcomes • consistent timely completion of trench support installation that safely, effectively and efficiently meets the required outcomes • installation of trench support on two projects in trenches deeper than 1.5 metres requiring the trench support to be installed, moved along or within the trench and removed from the trench
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the trench support installation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Traffic control signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• shoring systems • levelling equipment • hand and power tools • measuring equipment • shovels • picks • scaffolding • elevated work platforms • slings • chains
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Excavations may include:	• trenches • wells • pits
Trench may include:	• trenches of at least 1.5 metres in depth • trenches less than 1.5 metres deep
Shoring method may include:	• fixed and/or adjustable trench boxes • drag boxes • hydraulic vertical shoring • close timber shoring • aluminium shoring shields • powerbrace • lite box aluminium panels • slide rails
Erect shoring may include:	• using trench shoring mechanisms including:

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	• closed timber sheeting • soldier sets • segmental sections • trench shields • using shoring securing mechanisms including: • footings • needles • anchors • sole plates • struts • brackets

Unit Sector(s)

Civil Works (Common Units)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCM211A Erect and dismantle temporary fencing and gates

Modification History

Not applicable.

Unit Descriptor

This unit covers the erection and dismantling of temporary fencing and gates in the civil construction industry. It includes planning and preparing, erecting fencing, erecting gates and signage, removing and making good, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement **traffic control signage** requirements from the project ***traffic*** management plan 1.4. Select ***tools and equipment*** to carry out ***fencing*** consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Erect fencing	2.1. Set out fence line and ***anchoring*** structure positions to requirements of plans and specifications 2.2. Erect fence posts in place and plumb to alignment 2.3. Fix fence rails and cladding or mesh to posts 2.4. Maintain ***fencing and gates*** to completed construction condition
3. Erect gates and signage	3.1. Fit gates and secure to requirements of site drawings and specifications 3.2. Install ***signage at entry gates*** in accordance with site safety plan and security requirements
4. Remove and make good	4.1. Dismantle gates and fencing and remove from site as required 4.2. Make area good to work specification
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store tools and equipment t

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to erect and dismantle temporary fencing and gates:

- apply legislative, organisation and site requirements and procedures for erect and dismantle temporary fencing and gates
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to erect and dismantle temporary fencing and gates:

- site and equipment safety requirements
- fencing systems
- anchoring systems
- site safety and security isolation
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for erecting and dismantling temporary fencing and gates • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the erection and dismantling of temporary fencing and gates • working with others to undertake and complete the erection and dismantling of temporary fences and gates in a way that meets all of the required outcomes • consistent timely completion of the erection and dismantling of temporary fences and gates that safely, effectively and efficiently meets the required outcomes • completion of the erection and dismantling of fencing to enclose an area of at least 100m² including at least one gate to specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the erection and dismantling of temporary fences and gates

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• new construction sites • on site locations • off site in an external paddock environment • existing fencing situations
Traffic control signage may include:	• on unit signage • escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• measuring tapes • rulers • hammers • socket wrenches • fencing strainers • pliers and wire cutters • pop riveters • levelling equipment • docking saws • drop saws • jigs • stops • power drills • screwdrivers • bits and drills • clamps • squares • nail guns
Fencing is erected to:	• prevent potential accidents which may occur by unauthorised access • protect valuable machinery

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	• prevent materials from being contaminated
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Anchoring of posts may include:	• cement blocks • anchor bolts • sand bags
Fencing and gates may include:	• metal mesh fences and gates • timber cladding fences and gates
Signage at entry gates may include:	• site safety information • security access information
Materials may include:	• fencing mesh • fencing wire • metal posts • metal rails • concrete fencing materials • anchor bolts • timber posts • rails • pickets • palings • cladding • sand bags

Unit Sector(s)

Civil Works (Common Units)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICCM301A Construct and dismantle fences and gates

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction and dismantling of fences and gates in the civil construction industry. It includes planning and preparing, erecting fences, erecting gates and signage, removing and making good, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***traffic control signage*** requirements from the project ***traffic*** management plan 1.4. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Erect fences	2.1. Set out fence line and post positions to requirements of plans and specifications 2.2. ***Erect*** fence ***posts*** are erected in place and plumb to alignment 2.3. Fix fence rails and/or wire, cladding or mesh to posts 2.4. Maintain ***fencing and gates*** to completed construction condition
3. Erect gates and signage	3.1. Fit and secure gates to requirements of site drawings, specifications and/or landowner requirements 3.2. Install ***signage at entry gates*** in accordance with site safety plan and security requirements where specified
4. Remove and make good	4.1. Dismantle ***fences and gates*** and remove them from land or site where specified 4.2. Make area good to work specification
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store tools and equipment t

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct and dismantle fences and gates:

- apply legislative, organisation and site requirements and procedures for constructing and dismantling fences and gates
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to construct and dismantle fences and gates:

- site and equipment safety requirements
- fencing systems
- fence construction techniques
- site safety and security isolation
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheet and materials handling methods
- quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for constructing and dismantling fences and gates • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the construction and dismantling of fences and gates • working with others to undertake and complete the construction and dismantling of fences and gates in a way that meets all of the required outcomes • consistent timely completion of the construction and dismantling of fences and gates that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction and dismantling of fences and gates

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• new construction sites • on site locations • off site in an external paddock environment • existing fencing situations
Traffic control signage may include:	• unit signage • escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• measuring tapes • rulers • hammers • rammers • socket wrenches • fencing strainers • pliers and wire cutters • pop riveters • levelling equipment • docking saws • drop saws • jigs • stops • power drills • screwdrivers • bits and drills • clamps • squares • nail guns
Environmental protection	• organisational/project environmental management plan

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requirements may include:	• waste management • water quality protection • noise • vibration • dust • clean-up management
Erection of fences may include:	• re-fence existing land owner properties where new civil works may have claimed land • prevention of potential accidents which may occur by unauthorised access on worksites • protection of valuable machinery • prevention of materials from being contaminated
Posts may be secured by:	• cement footings • rammed • earth packed
Fencing and gates may include:	• post, wire and droppers or metal mesh fences and gates • timber cladding fences and gates
Signage at entry gates may include:	• site safety information • security access information
Materials may include:	• fencing mesh • fencing wire • droppers • metal posts • metal rails • concrete fencing materials • anchor bolts • timber posts • rails • pickets • palings • cladding

Unit Sector(s)

Civil Works (Common Units)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCR401A Develop and maintain positive community relations

Modification History

Not applicable.

Unit Descriptor

This unit covers the development and maintenance of positive community relations in the resources and infrastructure industries. It includes establishing community relationship strategies, developing and maintaining community relationships, representing the organisation in the community, and maintaining and improving ongoing community relationships. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish community relationship strategies	1.1. Access, interpret and apply ***compliance documentation*** relevant to the community relationship strategies 1.2. Identify relevant ***community*** groups and individuals 1.3. Assess community group/individual profiles to determine community ***relationship strategy*** 1.4. Identify and analyse a range of community relationship strategies and activities which meet organisational requirements 1.5. Develop relationship strategies to foster trust and confidence of individuals and community and to promote benefits consistent with organisational interests and requirements
2. Develop and maintain community relationships	2.1. Use appropriate ***networking strategies*** and ***activities*** to establish and maintain community relationships 2.2. Identify and pursue networking opportunities to maximise a range of community contacts 2.3. Provide ***information*** to the community regarding new networks 2.4. Inform individuals and colleagues of potential benefits to the organisation by participating in networks 2.5. Participate in ***professional networks and associations*** to obtain and maintain knowledge of the community, its representatives and issues 2.6. Respond to community requests for information or participation in accordance with organisational policies and procedures 2.7. Act on ***opportunities to explain and promote*** the organisation's activities to develop and support community recognition 2.8. Refer non-routine requests for information to the appropriate person
3. Represent the organisation in	3.1. Represent the organisation's position on

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the community	particular issues in a way that acknowledges community concerns and promotes community awareness 3.2. Enhance the organisation's public image through communication and presentations to the public 3.3. Use appropriate presentation skills to communicate the goals and objectives of the organisation 3.4. Effectively communicate issues, policies and practices of the community group, individuals or organisation 3.5. Obtain ***feedback*** to identify and develop ongoing activities
4. Maintain and improve ongoing community relationships	4.1. Establish processes for obtaining ongoing feedback from community groups or individuals 4.2. Assess management systems to ensure they support community relationships 4.3. Obtain and use feedback to develop and implement strategies to maintain and improve relationships with the community 4.4. Identify difficult situations and negotiate solutions using collaborative problem-solving techniques

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out or possess the following as required to develop and maintain positive community relations:

- apply legislative, organisation and site requirements and procedures for development and maintenance of positive community relations
- communication skills to liaise effectively with a variety of stakeholders
- literacy skills to produce high quality easy to understand written communications
- presentation skills to convey verbal messages effectively
- networking skills to form relationships with a variety of stakeholders
- organisational and time management skills to plan and manage own work priorities and community relations activities
- evaluation and problem solving skills to select appropriate community relationship strategies and overcome difficulties arising from community relations
- interpersonal skills to relate to people from diverse groups and abilities
- technology skills relevant to conducting community relations activities
- leadership skills to provide direction and guidance in developing community relationships

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to develop and maintain positive community relations:

- availability of organisation's and/or industry information and/or promotional material
- legislative responsibilities relevant to provision of information
- organisation's position on current issues
- range of community issues and organisations
- range of community activities that could be used to promote the organisation
- knowledge of the organisation's policies, plans and procedures
- principles of effective communication in relation to listening, questioning and non-verbal communication
- techniques for building relationships of trust with people including people from different cultures
- methods and techniques to prepare and present information to promote the organisation
- knowledge of related organisations, agencies and networks

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- principles and operation of networks
- risks insurance and site staff briefing requirement for site visits
- recording procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for developing and maintaining positive community relations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of development and maintenance of positive community relations • working with others to plan, prepare and conduct positive community relations • evidence of consistent successful positive community relations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the development and maintenance of positive community relations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the development and maintenance of positive community relations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Community may include:	• local community • business community • persons with a range of ages • persons from culturally and linguistically diverse backgrounds • persons with disabilities
Relationship strategies may include:	• informal and formal regular meetings • forums • feedback sessions • online media • events, including cultural events • sponsorship
Networking strategies may include:	• regular meetings • distribution of materials • individual marketing • maintaining regular contacts • association and interest group memberships • workshops and seminars
Activities may include:	• career promotions • local shows • ceremonies • organisation specific events and regular state/national events • shopping mall promotions
Information may include:	• how to participate • publicity material

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	• contact information
Professional networks and associations may include:	• work teams • other organisations • committees • internal and external stakeholders • government agencies • professional or occupational associations • community groups • project-specific ad hoc consultative or reference groups • advisory committees • local inter-agency groups • specific interest or support groups

Opportunities to explain and promote include:	• answering general enquiries
	• addressing negative community opinion
	• presentations at community group gatherings
	• special interest forums
	• community events and festivals
	• participation in conferences
	• representing organisation on associations and committees
	• school visits
	• media (where media access is permitted), including:
	  • advertising
	  • news articles

Feedback may include:	• accuracy and sufficiency of information • benefits to the organisation • benefits to the community • use of media • liaison with networks • appropriateness of audience • participation of individuals and groups

Unit Sector(s)

Customer and Community Relations

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICCR501A Conduct sales in construction materials operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of sales in construction materials operations in the resources and infrastructure industries. It includes identifying local market opportunities, conducting and following through sales, establishing potential customer database and site sales systems, developing and maintaining site sales operations, and preparing sales reports. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify local market opportunities	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Confirm local ***market information*** as regards ***construction materials*** 1.3. Identify ***sales area boundaries*** in accordance with economic efficiency/effectiveness 1.4. Identify and describe competitor organisations and basic profiles 1.5. Apply company products and pricing systems within organisational requirements 1.6. Implement company sales strategy
2. Conduct and follow through sales	2.1. Identify and apply successful sales processes to sales situations 2.2. Plan, undertake and records customer prospects 2.3. Plan, prepare and undertake the sales approach 2.4. Apply effective sales communication techniques in face to face, telephone and written situations 2.5. Prepare quotations/tenders 2.6. Plan, prepare and conduct sale presentations/demonstration 2.7. Handle objections effectively throughout the sales process 2.8. Apply a variety of closure techniques to secure sales 2.9. Follow up sales according to organisation follow up procedures and customer feedback mechanisms 2.10. Undertake a personal analysis in relation to achievement of success as a salesperson, and formulate a plan for ***personal development***
3. Establish potential customer database and site sales systems	3.1. Establish site processes and systems to monitor and review customer base and local market 3.2. Identify current and potential customers 3.3. Develop and record ***customer profiles*** in a

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	customer database 3.4. Establish and/or maintain liaison procedures between customers and company personnel 3.5. Manage order taking system and employees involved in the ordering process 3.6. Implement continuous improvement techniques and processes
4. Develop and maintain site sales operations	4.1. Agree and identify sales roles and responsibilities 4.2. Manage the activities of sales personnel where applicable 4.3. Develop and agree on weekly/monthly sales call plan 4.4. Prioritise and agree on sales activities 4.5. Identify, record and activate liaison procedures between customers and company personnel 4.6. Analyse result of sales to institute techniques for improvement of sales skills and organisational procedures 4.7. Observe and apply sales protocols 4.8. Document and communicate sales results within the organisation's reporting and continuous improvement process 4.9. Confirm and update records of customer profile/needs 4.10. Monitor sales stages according to agreed project milestones and negotiate adjustments as deemed necessary by both customer and supplier
5. Prepare sales reports	5.1. Maintain sales records and prepare reports 5.2. Identify sales/performance variances and take corrective action to adjust performance 5.3. Use local market information to update and develop sales strategies

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct sales in construction materials operations:

- apply legislative, organisation and site requirements and procedures for conducting sales in construction materials operations
- access, interpret and apply company sales systems and processes
- conduct cold calls
- initiate and close sales negotiations
- apply company pricing structure
- plan sales
- cost products
- conduct market information collection
- make decisions
- maintain records
- effective communication to coordinate teams, negotiate, resolve conflict, run meetings
- writing skills to prepare correspondence and reports

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct sales in construction materials operations:

- site products and services
- competitor market information
- site pricing structure - transport, products, profit margins
- company systems - costing, invoicing credit, delivery
- sales techniques and strategies
- company delivery capabilities - loading equipment and transport capability
- customers profiles and processes
- contract law relevant to sales operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting sales in construction materials operations • implementation of procedures and techniques for the safe, effective and efficient conduct of sales in construction materials operations • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of methods of conducting sales in construction materials operations that best meet the required outcomes • working with others to undertake and complete the conduct of sales in construction materials operations • consistent successful conduct of sales in construction materials operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge in undertaking the conduct of sales in construction materials operations
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of methods of conducting sales in construction materials operations that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of sales in

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	construction materials operations • provision of clear and timely required support and advice on the conduct of sales in construction materials operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Construction materials may include:	• quarry products • other extractive industries operations products • pre-mixed concrete • road and pavement surfacing products and services

Market information may include:	• local/state/federal government conditions
	• market trends - volumetric, changing product profile, substitutes, pricing
	• competitors:
	  • products
	  • people
	  • locations(s)
	  • capabilities
	  • profile
	• delivery - distance and time/means
	• company and/or site production capacity
	• customers' perceptions/objections
	• customers' purchasing profile
	• roles and responsibilities of customer's personnel
	• environmental implications
	• occupational health and safety implications
	• specifications and standards

Sales area boundaries may be set by:	• geographic boundaries • transportation systems • operating limits

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	• coordination with other operations within the organisation
Personal development may include:	• product knowledge • sales skills • personal presentation • interpersonal communication skills • personal style and/or image • attitudinal • company policy/quality system • preparing customer profiles • company production capability versus customers requirements • distribution networks • company pricing structures • negotiation skills • conflict resolution • customer relations • roles and responsibilities of sales and production personnel • sales techniques • company recording/reporting systems
Customer profiles may include:	• credit rating • historic sales • product pricing • payment system and invoicing arrangements • product types, quality and quantity • delivery/transport methods and arrangements • purchasing trend

Unit Sector(s)

Customer and Community Relations

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICCR601A Manage customer relationships

Modification History

Not applicable.

Unit Descriptor

This unit covers management of client relationships in the resources and infrastructure industries. It includes planning to meet client requirements, identifying opportunities for product and service enhancement, exploring opportunities to improve client satisfaction, and monitoring marketing performance.
Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan to meet client requirements	1.1. Access, interpret and apply ***compliance documentation and requirements*** relevant to the work activity 1.2. Research, understand and assess the needs of clients and include them in the planning process 1.3. Make provision in plans to negotiate quality, time and cost specifications with clients 1.4. Maintain effective communication links and consultative processes with clients
2. Identify opportunities for product and service enhancement	2.1. Identify existing and/or potential customer base as a guide to establishing demand 2.2. Identify service opportunities and promote them to potential clients 2.3. Determine client requirements and preferences in relation to services to be supplied as a basis for the marketing strategy 2.4. Implement systems to receive, respond to and address client reactions 2.5. Implement ***marketing strategies*** aimed at improving the business' competitive position
3. Explore opportunities to improve client satisfaction	3.1. Deliver products and services to ***client satisfaction*** within quality, time, cost and resource parameters 3.2. Maintain quality of products and services by establishing client feedback mechanisms 3.3. Discuss problems and resolve, where possible, through agreed and accepted processes 3.4. Investigate client complaints promptly and regard them as an opportunity to improve service
4. Monitor marketing performance	4.1. Monitor achievement of performance targets regularly in accordance with the marketing plan 4.2. Investigate causes of any serious performance deviations and take corrective

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	action 4.3. Monitor and optimise production operations 4.4. Use ***resources*** effectively and efficiently to provide a quality service to clients 4.5. Plan and introduce strategies which support the establishment of long term relationships with clients 4.6. Adjust product and service delivery promptly and decisively to satisfy client and organisational requirements 4.7. Manage ***records***, reports and recommendations within the organisation's system and processes

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to manage customer relationships:

- manage legal rights and responsibilities
- research techniques for collection of data
- analyse problems
- apply problem solving
- use numerical calculations, including basic arithmetical calculations (addition, subtraction, multiplication, division)
- interpret statistical diagrams, including tables, charts and graphs
- manage contractual rights and responsibilities
- plan and manage customer relationships (including sales, advertising and promotion, logistics)
- apply key marketing concepts and methods
- monitor client satisfaction
- use record keeping systems
- apply communication systems, processes and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to manage customer relationships:

- legal rights and responsibilities
- contractual rights and responsibilities
- planning and control systems (sales, advertising and promotion, logistics)
- key marketing concepts and methods
- methods of monitoring client satisfaction
- numerical concepts such as percentages, place value for whole numbers and decimals, estimation (for example, quantities, resources, time)
- record keeping systems
- communication systems, processes and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for managing customer relationships • implementation of procedures and techniques for the safe, effective and efficient management of customer relationships • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of customer relationship management strategies that best meet the required outcomes • working with other to undertake and complete the management of customer relationships • consistent successful management of customer relationships
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the management of customer relationships
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of customer relationship management that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the management of customer relationships

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	• provision of clear and timely required support and advice on the management of customer relationships
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation and requirements may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • common law • dangerous goods • development of training policies/programs • industrial relations • industry licensing • local government • mines Acts • navigation • planning and assessment • trade practices • customer protection legislation • enterprise/client relations, policy and procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Marketing strategies may include:	• achieving lower costs than competitors through greater efficiency • pursuing cost leadership with a specialist market • promotion and advertising
Client satisfaction data may be obtained through:	• survey/other feedback mechanisms • informal discussion • client meetings
Resources may include:	• people • finance • information • equipment • power/energy • time

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	• buildings/facilities • technology • computer software
Records may be:	• paper-based or computerised

Unit Sector(s)

Customer and Community Relations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICFW301A Construct underpinning

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction of underpinnings in the civil construction industry. It includes planning and preparing, setting out and preparing sections, excavating sections, constructing underpinnings, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.5. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set out and prepare sections	2.1. Identify and record ***underpinning requirements*** for adjoining properties and roadways from site drawings and surveys of the surrounding construction 2.2. Identify and implement sections and sequence of excavations from the planned schedule for underpinning 2.3. Check existing ***shoring system*** for soundness and conformation to specifications and design requirements 2.4. Set out sections for excavation to underpinning specifications and schedule 2.5. Identify and protect areas for excavation and surrounding working space requirements to provide a safe working area 2.6. Erect barricades and signage, where required, in accordance with the site safety plan 2.7. Position plant and equipment for excavations

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3. Excavate sections	3.1. Excavate designated sections to the designed depth of footings 3.2. Install trench and excavation support in accordance with ***soil*** characteristics, safety considerations and the job safety analysis
4. Construct underpinning	4.1. Construct underpinning in accordance with job specifications 4.2. Backfill excavated sections 4.3. Underpin alternate sections in sequence according to underpinning schedule
5. Clean up	5.1. Clear work area and disposed of or recycled ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct underpinnings:

- apply legislative, organisation and site requirements and procedures for the construction of underpinnings
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to construct underpinnings:

- site and equipment safety requirements
- foundation work
- civil construction terminology
- underpinning techniques
- construction principles
- processes for interpreting engineering drawings
- soil, sand, rock, clay, shale, gravel and silt types and characteristics
- water erosion
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for constructing underpinnings • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of underpinning construction • working with others to undertake and complete the construction of underpinnings that meets all of the required outcomes • consistent timely completion of underpinning construction that safely, effectively and efficiently meets the required outcomes • construction of underpinning for a minimum of two projects, one using drilling techniques and one using excavation techniques to the required job specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction of underpinnings

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevantcompliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety (**OHS**) may include:	• OHS requirements are to be in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation • safe operating procedures are to include but not be limited to recognising and preventing hazards associated with overhead and underground services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public
Signage may include:	• escort vehicle

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	• highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• compressors • fittings and hoses • pneumatic picks and jack hammers • pumps • winches
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection noise vibration • dust and clean-up management
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection noise vibration • dust and clean-up management
Underpinning requirements may include:	• land subsidence due to water ingress • increase structural stability • the preparation for additions to structures
Shoring system may include:	• sheet piling • trench shields • timber sets
Soil may include:	• sand • rock • clay • shale • gravel • silt
Materials may include:	• timber • reinforced concrete

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	• concrete grout • select rock

Unit Sector(s)

Foundation Works

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICFW302A Install temporary and permanent rock anchors

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of temporary and permanent rock anchors in the civil construction industry. It includes planning and preparing, setting up and preparing anchor holes, installing anchors to anchor holes, setting up anchorage assembly to stress anchors, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.5. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set up and prepare anchor holes	2.1. Check components to verify conformity with job requirements 2.2. Grease, sheathe and assemble anchors to specifications 2.3. Prepare ***temporary anchors*** with spacers and fit grout tubes 2.4. Prepare permanent anchors with spacers, fit grout tubes and prepare external polyethylene sheath 2.5. Install anchors and sheaths to full depth, without damage and to specifications 2.6. Set up grouting plant and flow monitoring apparatus to design requirements 2.7. Mix and pump grout into hole
3. Install anchors to anchor holes	3.1. Check components to verify conformity with job requirements 3.2. Grease, sheathe and assemble anchors to specifications 3.3. Prepare ***temporary anchors*** with spacers

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	and fit grout tubes 3.4. Prepare permanent anchors with spacers, fit grout tubes and prepare external polyethylene sheath 3.5. Install anchors and sheaths to full depth, without damage and to specifications 3.6. Set up grouting plant and flow monitoring apparatus to design requirements 3.7. Mix and pump grout into hole
4. Set up anchorage assembly and stress anchors	4.1. Correctly place anchorage using packing materials as specified 4.2. Stress anchors to nominated loads 4.3. Lock off anchors to nominated loads as designed 4.4. Install mesh to job specification 4.5. Apply shotcrete to design depth, tolerance and job specification 4.6. Monitor permanent anchors at scheduled intervals to determine and record anchor's residual load 4.7. Cut anchors where required and seal to specification requirements
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install temporary and permanent rock anchors:

- apply legislative, organisation and site requirements and procedures for installing temporary and permanent rock anchors
- apply legislative, organisation and site requirements and procedures for conducting earthworks
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install temporary and permanent rock anchors:

- site and equipment safety requirements
- foundation work
- temporary and permanent rock anchors and their installation techniques
- scaffolding and work platform installation
- construction principles
- processes for interpreting engineering drawings
- soil, sand, rock, clay, shale, gravel and silt types and characteristics
- water erosion
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing temporary and permanent rock anchors • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of temporary and permanent rock anchor installation • working with others to undertake and complete the installation of temporary and permanent rock anchors that meets all of the required outcomes • consistent timely completion of temporary and permanent rock anchor installation that safely, effectively and efficiently meets the required outcomes • installation of a minimum of ten permanent anchor bolts, finished with mesh and shotcrete • installation of a minimum of ten temporary anchor bolts
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of temporary and permanent rock anchors

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements are to be in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures are to include but not be limited to recognising and preventing hazards associated with overhead and underground services, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Site may include:	• cuttings • tunnels • embankments

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Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, **tools and equipment** may include:	• compressors • pneumatic tools • spanners • drilling rigs • attachments • grouting rigs
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Requirements may include:	• ground stabilisation • roof and wall support • stressing
Anchors may include:	• anchor bolts • cable anchoring • spiling bars • grouted anchors and bolts • mechanically anchored bolts • dowels
Temporary anchors be required for:	• construction processes • stability for temporary structures • stability to operating plant
Materials may include:	• anchor bolts • spiling bars • steel cables

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	• ribbed steel bards

Unit Sector(s)

Foundation Works

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICFW303A Install primary ground support

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of primary ground support in the civil construction industry. It includes planning and preparing, setting out and preparing for primary ground support, installing primary ground support, maintaining primary ground support, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.5. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set out and prepare for primary ground support	2.1. Determine the requirements for ground support construction from ground conditions and engineer's directions 2.2. Identify and implement method of ground support installation in accordance with the excavation process 2.3. Obtain material requirements for ***primary ground support*** 2.4. ***Install*** primary ground support in accordance with the progressive development of the excavation process 2.5. Set out position of sets/rings and points of support to engineer's specifications 2.6. Prepare component parts of ground support to designed requirements
3. Install primary ground support	3.1. Select relevant primary ground support system 3.2. Install primary ground support system in accordance with job specifications
4. Maintain primary ground	4.1. Carry out daily inspection of primary

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support	ground support to ensure system is secure in accordance with specifications, particularly where explosives are in use 4.2. Identify faults and make adjustments to ensure ground support is maintained 4.3. Identify ground faults and determine and carry out support rectifications to engineer's design and specifications
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install primary ground support:

- apply legislative, organisation and site requirements and procedures for installing primary ground support
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install primary ground support:

- site and equipment safety requirements
- foundation work
- primary ground support systems and their installation techniques
- scaffolding and work platform installation
- construction principles
- processes for interpreting engineering drawings
- soil, sand, rock, clay, shale, gravel and silt types and characteristics
- water erosion
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for installing primary ground support
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of primary ground support installation
	• working with others to undertake and complete the installation of primary ground support that meets all of the required outcomes
	• consistent timely completion of primary ground support installation that safely, effectively and efficiently meets the required outcomes
	• installation of at least one of the following primary ground support systems to specifications:
	  • sets and rings for two projects
	  • sheet piling for one project
	  • panel and box sets for two projects

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and

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	infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of primary ground support

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements are to be in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures are to include but not be limited to recognising and preventing hazards associated with overhead and underground services, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • hazards and risks may include but not be limited to uneven/unstable terrain, fires, overhead and underground services, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures are to include but may not be limited to extinguishing fires, organisational First Aid requirements and evacuation
Site may include:	• cuttings • tunnels • embankments

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Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• shovels • crow bars • spanners • measuring tapes • picks • mattocks • sledge hammers • spirit levels • angle grinders • kanga hammers • tampers • oxy-acetylene equipment
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Primary ground support may include:	• steel sets/rings • timber sets • pre-cast concrete segmental sections • timber lagging sections • steel spilings • steel sheeting • dry mix concrete pads • reinforced concrete beams
Install may include:	• ground stabilisation to access shafts and

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	tunnels • embankment stabilisation
Materials may include:	• sets and rings • sole plates • posts/legs • headers/crowns • liner blocks and prefabricated lattice girders • sheet pilings • lagging • sheeting • pile caps • wailers • panel • box sets • longitudinal ties • sets • braces

Unit Sector(s)

Foundation Works

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICFW304A Conduct pile driving operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the driving of piles in the civil construction industry. It includes planning and preparing, locating pile positions and establishing piling rig plants, driving piles, removing piling rigs, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the driving of piles 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.5. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Locate pile positions and establish piling rig plant	2.1. Establish location for piles from reference points and set out to requirements 2.2. Establish plant and related equipment in position and check for operation in accordance with standard operating procedures 2.3. Prepare and check pile for conformity 2.4. Identify and protect area for pile driving and surrounding working space in accordance with safety requirements
3. Drive pile	3.1. Lift pile and manoeuvre into position using the piling rig in accordance with standard operating procedures 3.2. Set up piling rig and ***drive pile*** into place in accordance with standards 3.3. Carry out splicing or jointing in accordance with engineers' specifications
4. Remove piling rig	4.1. Dismantle plant and related equipment in accordance with manufacturer's manual and

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	standard operating procedures 4.2. Relocate piling rig in preparation for next piling installation procedure
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to drive piles:

- apply legislative, organisation and site requirements and procedures for driving piles
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to drive piles:

- site and equipment safety requirements
- foundation work
- piles and their installation techniques
- scaffolding and work platform installation
- construction principles
- processes for interpreting engineering drawings
- soil, sand, rock, clay, shale, gravel and silt types and characteristics
- water erosion
- processes for installing piles in water
- equipment types, characteristics, technical capabilities and limitations
- procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for the conducting of pile driving operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of pile driving operations, which are to include:
	  • a minimum of two timber piles or two pre-cast concrete piles, and
	  • driven using at least one of the three pile hammering methods
	• working with others to undertake and complete pile driving operations that meet all of the required outcomes
	• consistent timely completion of pile driving operations that safely, effectively and efficiently meets the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• a minimum of two timber piles or two pre-cast concrete piles, and
	• driven using at least one of the three pile hammering methods
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the driving of piles

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements are to be in accordance with state or territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures are to include but not be limited to recognising and preventing hazards associated with overhead and underground services, other machines, personnel, traffic control, working at heights, working proximity to others, worksite visitors and the public • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation • safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised

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	access or movement
Site may include:	• new construction sites • existing structures being renovated or extended • existing structure subject to service restoration or maintenance • road works • earthworks • wharves • marine • bridges • foundation
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, **tools and equipment** may include:	• pile hammers (static weight, diesel injection and hydraulic) • shovels • crow bars • measuring tapes • spirit levels • plumb bob • scaffolding
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Drive pile may include:	• pre-cast concrete and may include steel • mechanically jointed pre-cast concrete

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	• temporary timber piles • temporary metal sheeting piles
Materials may include:	• piles (timber, concrete or steel)

Unit Sector(s)

Foundation Works

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICFW305A Conduct cast in-situ pilings operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the boring of cast in-situ piles in the civil construction industry. It includes planning and preparing, locating and preparing pile positions, placing concrete, removing boring rigs, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the boring of cast in-situ piles 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Locate and prepare pile positions	2.1. Establish location for ***piles*** from reference points and set out according to requirements 2.2. Position and check plant and related equipment for operation in accordance with standard operating procedures 2.3. ***Bore*** hole to job specification 2.4. Check ***caisson*** for conformity with design specifications 2.5. Install caisson in the bored hole 2.6. Prepare caisson to receive concrete
3. Place concrete	3.1. Place concrete into caisson 3.2. Vibrate concrete, removing voids and air pockets to job specifications
4. Remove boring rig	4.1. Relocate boring rig to next point of installation operation 4.2. Remove boring rig from site on completion of work
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant,

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	tools and equipment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to bore cast in-situ piles:

- apply legislative, organisation and site requirements and procedures for boring cast in-situ piles
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to bore cast in-situ piles:

- site and equipment safety requirements
- foundation work
- bored cast in-situ piles and their installation techniques
- scaffolding and work platform installation
- construction principles
- processes for interpreting engineering drawings
- soil, sand, rock, clay, shale, gravel and silt types and characteristics
- water erosion
- processes for installing piles in water
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conducting cast in-situ piling operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting cast in-situ piling operations, which is to include: • preparation and boring of a hole to install a minimum of one caisson, including reinforcement construction and placing concrete to that caisson • working with others to conduct cast in-situ piling operations that meet all of the required outcomes • consistent timely completion of cast in-situ piling operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• preparation and boring of a hole to install a minimum of one caisson, including reinforcement construction and placing concrete to that caisson
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the boring of cast in-situ piles

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements are to be in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures are to include but not be limited to recognising and preventing hazards associated with overhead and underground services, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • hazards and risks may include but not be limited to uneven/unstable terrain, fires, overhead and underground services, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation • safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from

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	excavations, and secured from unauthorised access or movement
Site may include:	• new construction sites • existing structures being renovated or extended • existing structure subject to service restoration or maintenance • road works • earthworks • wharves • marine • bridges • foundation
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, **tools and equipment** may include:	• augers • shovels • crow bars • measuring tapes • spirit levels • plumb bobs • compressors • concrete vibrators • high pressure hoses • scaffolding
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management

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Piles may include:	• bored cast in-situ • may include compressed and grout crete piles
Bore may include:	• auger • water jetting
Caisson may include:	• cleaning and installation of reinforcement
Materials may include:	• reinforced steel • caissons • concrete

Unit Sector(s)

Foundation Works

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICFW306A Direct pile driving operations

Modification History

Not applicable.

Unit Descriptor

This unit covers directing pile driving operations in the civil construction industry. It includes planning and preparing for the operations, locating the pile position and establishing the piling rig, supporting the piling process and carrying out post-operational requirements.

Application of the Unit

Driven piles include timber, pre-cast concrete and may include steel, mechanically jointed pre-cast concrete, metal sheeting piles. This unit is appropriate for those working in supporting roles in piling, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for assisting with operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the directing of pile driving operations 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Obtain platform certification 1.4. Identify, manage and report all ***potential hazards*** 1.5. Obtain, confirm and apply ***safety requirements*** and ***environmental requirements*** for the allotted task 1.6. Select and use appropriate ***personal protective equipment*** and protective clothing ay all times 1.7. Identify, obtain and implement signage requirements from the project traffic management plan and/or ***safety requirements*** 1.8. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.9. Select plant, ***tools and equipment*** to carry out tasks that are suitable and consistent with the requirements of the task, and check them for serviceability and rectify or report any faults
2. Assisting with the locating pile position and establishing the piling rig	2.1. Establishing the location for piles from reference points and set out to requirements 2.2. Establishing recovery pegs and conducting on-going measurements to ensure the correct location 2.3. Directing the establishment of the plant and related equipment in position and assist with checking for operation 2.4. Preparing and checking pile for conformity with ***work instructions*** 2.5. Identify and protect area for pile driving and surrounding working space
3. Support the piling process	3.1. Provide guidance for lifting and maneuvering of piles into position 3.2. Provide guidance for setting up piling rig

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	and driving pile into place in accordance with ***work instructions*** 3.3. Direct the splicing or jointing in accordance with engineer's specifications
4. Carryout post-operational requirements	4.1. Assist with dismantle plant and related equipment 4.2. Provide direction for relocation of piling rig 4.3. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.4. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assist with pile driving operations:

- apply legislative, organisation and site requirements and procedures for
- apply off-set pegging techniques
- apply pile locating techniques
- apply plumbing and pile driving techniques
- apply pile splicing and joining procedures
- apply maintenance requirements and procedures
- interpret engineering drawings
- apply operational safety requirements
- apply environmental requirements
- apply environmentally sensitive fluids and materials disposal requirements and procedures
- apply chemical and fuel safety measures
- apply hazardous goods handling techniques
- apply manual lifting techniques
- work wearing personal protective equipment
- apply work tasks organising techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assist with pile driving operations:

- hazard identification and risk management procedures
- site personal protective equipment requirements
- site and equipment health and safety procedures
- site environmental and heritage requirements and constraints
- emergency procedures
- isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- safe work method statement and/or Job safety analysis requirements and procedures
- environmental requirements and procedures
- water erosion issues

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- types and characteristics of soil, sand, rock, clay, shale, gravel and silt and water table
- civil construction terminology
- civil construction procedures
- foundation work procedures
- machine characteristics, technical capability and limitations
- driven piles and their installation techniques
- techniques for installing piles in water
- project quality requirements
- work platform installation requirements and procedures
- operational, maintenance and basic diagnostic procedures
- machine operational procedures
- isolation procedures
- maintenance systems and procedures
- site record keeping requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for directing pile driving operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient directing of pile driving operations, which are to include:
	  • a minimum of two timber piles or two pre-cast concrete piles, and
	  • driven using at least one of the three pile hammering methods
	• working with others to undertake and complete pile driving operations that meet all of the required outcomes
	• consistent timely direction of pile driving operations that safely, effectively and efficiently meets the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace context. The assessment environment should not disadvantage the participant. For example, language, literacy and

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	numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• a minimum of two timber piles or two pre-cast concrete piles, and
	• driven using at least one of the three pile hammering methods
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete pile driving operations

Guidance information for	Consult the SkillsDMC User Guide for further

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assessment	information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks, • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• uneven terrain • unstable terrain • trees • fires • overhead and underground services • excavations • traffic • embankments • cuttings

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	• structures • hazardous materials • equipment failure • confined operations • uncontrolled interaction with other plant

Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection
	  • determination of appropriate path of movement for loads and equipment/vehicles
	  • selection and implementation of environmental control measures

Safety requirements may include:	• protective clothing and equipment
	• use of tools and equipment
	• workplace environment and safety
	• handling of materials
	• use of fire fighting equipment
	• use of First Aid equipment
	• control of hazardous materials and substances
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • overhead and underground services
	  • other machines
	  • personnel
	  • traffic control
	  • working in proximity to others
	  • worksite visitors and the public
	• emergency procedures, including:
	  • emergency shutdown and stopping
	  • extinguishing equipment fires
	  • organisational First Aid requirements
	  • evacuation
	• safe parking practices, including:
	  • clear access ways
	  • equipment/machinery is away from overhangs and refuelling sites

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	• safe distance from excavations • secured from unauthorised access or movement
Environmental Requirements may include:	• waste management • water quality protection • noise • vibration • dust • clean-up management
Coordination requirements may include:	• piling team • other equipment operators • maintenance personnel • supervisors • other worksite personnel • external consultants • visitors
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Tools and equipment will include:	• pile hammers • shovels • crow bars • measuring tapes • spirit levels • plumb bob • and may include scaffolding
Hazardous and emergency situations may include:	• powerlines and other overhead services • underground services • dust and noise • lighting strikes • high wind • unstable ground conditions • confined operations • uncontrolled interaction with other plant
Records and reports may include:	• fuel usage • computer readings • end of shift documentation • quality information

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Unit Sector(s)

Foundation Works

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICFW307A Direct cast in-situ piling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers directing of cast in-situ piling operations in the civil construction industry. It includes planning and preparing for the operations; directing the rig, locating and preparing pile positions; placing concrete; and carrying out post-operational requirements.

Application of the Unit

The boring process for casting in-situ piles may include auger bored and they may be CFA piles. This unit is appropriate for those working in supporting roles in piling, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for assisting with operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the directing of cast in-situ piling operations 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all ***potential hazards*** 1.4. Obtain, confirm and apply ***safety requirements*** and ***environmental requirements*** for the allotted task 1.5. Select and use appropriate ***personal protective equipment*** and protective clothing ay all times 1.6. Identify, obtain and implement signage requirements from the project traffic management plan and/or ***safety requirements*** 1.7. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.8. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the task, and check them for serviceability and rectify or report any faults
2. Directing the rig, locating and preparing pile positions	2.1. Establishing the location of piles from reference points and set out to requirements 2.2. Establishing recovery pegs and conducting on-going measurements to ensure correct location 2.3. Positioning and checking plant and related equipment for operation 2.4. Provide guidance for boring of holes to ***work instructions*** 2.5. Installing the casing in the bored hole if applicable 2.6. Preparing pile to receive concrete in accordance with ***work instructions***
3. Assist with placing concrete	3.1. Placing concrete into pile 3.2. Have knowledge of placing concrete in

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	wet/dry conditions
4. Carryout post-operational requirements	4.1. Provide direction for the relocation of boring rig to next point of installation operation 4.2. Provide direction with removal of boring rig from site on completion of work 4.3. Clear work area and dispose of or recycle materials in accordance with requirements 4.4. Clean, check, maintain and store plant, tools and equipment as recommended and required

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to direct with cast in-situ piling operations:

- apply legislative, organisation and site requirements and procedures for
- apply off-set pegging techniques
- apply pile locating techniques
- apply maintenance requirements and procedures
- interpret engineering drawings
- apply operational safety requirements
- apply environmental requirements
- apply environmentally sensitive fluids and materials disposal requirements and procedures
- apply chemical and fuel safety measures
- apply hazardous goods handling techniques
- apply manual lifting techniques
- work wearing personal protective equipment
- apply cast in-situ piling operation techniques
- apply maintenance requirements and procedures
- apply work tasks organising techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assist with cast in-situ piling operations:

- hazard identification and risk management procedures
- site personal protective equipment requirements
- site and equipment health and safety procedures
- site environmental and heritage requirements and constraints
- emergency procedures
- isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- safe work method statement and/or Job safety analysis requirements and procedures
- environmental requirements and procedures
- water erosion issues

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- types and characteristics of soil, sand, rock, clay, shale, gravel and silt and water table
- civil construction terminology
- civil construction procedures
- foundation work procedures
- machine characteristics, technical capability and limitations
- the boring process for cast in-situ piles and their installation techniques
- techniques for installing piles in water
- project quality requirements
- work platform installation requirements and procedures
- operational, maintenance and basic diagnostic procedures
- machine operational procedures
- isolation procedures
- maintenance systems and procedures
- site record keeping requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with cast in-situ piling operations • implementation of requirements, procedures and techniques for the safe, effective and efficient assisting with cast in-situ piling operations, which is to include: • preparation and boring of a hole to install a minimum of one caisson, including reinforcement construction and placing concrete to that caisson • working with others to undertake and complete the cast in-situ piling operations that meet all of the required outcomes • consistent timely completion of cast in-situ piling operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace context. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• preparation and boring of a hole to install a minimum of one caisson, including reinforcement construction and placing concrete to that caisson
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete cast in-situ piling operations

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks, • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• uneven terrain • unstable terrain • trees • fires • overhead and underground services • excavations • traffic • embankments • cuttings

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	• structures • hazardous materials • equipment failure • confined operations • uncontrolled interaction with other plant

Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection
	  • determination of appropriate path of movement for loads and equipment/vehicles
	  • selection and implementation of environmental control measures

Safety requirements may include:	• protective clothing and equipment
	• use of tools and equipment
	• workplace environment and safety
	• handling of materials
	• use of fire fighting equipment
	• use of First Aid equipment
	• control of hazardous materials and substances
	• obtain platform certification
	• obtain Underground services clearance
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • overhead and underground services
	  • other machines
	  • personnel
	  • traffic control
	  • working in proximity to others
	  • worksite visitors and the public
	  • adjacent structures
	• emergency procedures, including:
	  • emergency shutdown and stopping
	  • extinguishing equipment fires
	  • organisational First Aid requirements
	  • evacuation
	• safe parking practices, including:

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	• clear access ways • equipment/machinery is away from overhangs and refuelling sites • safe distance from excavations • secured from unauthorised access or movement
Environmental Requirements may include:	• waste management • water quality protection • noise • vibration • dust • clean-up management
Coordination requirements may include:	• piling team • other equipment operators • maintenance personnel • supervisors • other worksite personnel • external consultants • visitors
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Tools and equipment will include:	• pile hammers • shovels • crow bars • measuring tapes • spirit levels • plumb bob • and may include scaffolding
Hazardous and emergency situations may include:	• powerlines and other overhead services • underground services • dust and noise • lighting strikes • high wind • unstable ground conditions • confined operations • uncontrolled interaction with other plant

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Unit Sector(s)

Foundation Works

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICOM201A Communicate in the workplace

Modification History

Not applicable.

Unit Descriptor

This unit covers communicating in the workplace in resources and infrastructure industries. It includes identifying and accessing site communication equipment and systems; communicating using site equipment and systems; carrying out face-to-face routine communication; and completing written documentation.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and access site communication equipment and systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and access ***communication equipment and system*** components 1.3. Establish and maintain communication 1.4. Access and apply ***safety procedures*** related to communication equipment and systems
2. Communicate using site equipment and systems	2.1. Identify and select for use the most appropriate method of ***communication*** 2.2. Operate or use communication equipment and systems 2.3. Acknowledge and respond to communication or take, confirm and pass on promptly to the appropriate person 2.4. Pass communications in a clear and concise manner 2.5. Follow safety procedures, including the passing of reports and observance of local communications and emergency procedures 2.6. Identify and report faults in communication equipment
3. Carry out face-to-face routine communication	3.1. Speak clearly and listen carefully to ensure information is understood 3.2. Ask questions and confirm meaning of information where required 3.3. Maintain communication processes with other personnel to assist flow of work activities 3.4. Use site approved ***signalling*** methods to convey information 3.5. Participate in discussion to obtain relevant information and clarify meaning 3.6. Communicate cooperatively with other personnel
4. Complete written documentation	4.1. Complete all required ***documentation/computer generated documentation*** clearly, concisely and on time, using ***plain English*** 4.2. Use approved documents 4.3. Pass on written information to appropriate

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	personnel

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required for the safe, effective and efficient conduct of workplace communication:

- apply legislative, organisation and site requirements and procedures
- communicate clearly and promptly, listening carefully to instructions and information
- communicate concisely both written and verbally
- operate communications systems and equipment
- interpret other communications such as flags, lights, signs, bells and whistles
- apply operational safety requirements
- identify and report communication faults and deficiencies according to site procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required for the safe, effective and efficient conduct of workplace communication:

- current relevant legislative requirements, standards and site procedures
- worksite communication system components
- types of communications equipment and systems and their applications and limitations
- operational procedures and safety requirements of communication equipment and systems
- common faults in communication equipment/systems
- emergency communication procedures
- record maintenance
- site requirements and constraints related to communication equipment/systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to communicate on a workplace • implementation of requirements, procedures and techniques for the safe, effective and efficient communication in the workplace • working with others to communicate in the workplace and meet all of the required outcomes • consistent timely communication in the workplace that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace context. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to communicate in the workplace

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Communication equipment and systems may include:	• the systems overview
	• operating directories
	• communication equipment
	• site specific procedures and constraints including:
	  • call signs
	  • area descriptions
	  • voice procedure
	  • protocols
	• emergency procedures

Safety procedures may include:	• standard work instructions or equivalent • avoidance of energy sources • care of equipment • compliance with hazardous zone procedures
Communication may be by:	• radio • telephone • computer • lights • audible singles (bells, whistles and sirens) • physical signals (lamps and flags) • written and • verbal
Signaling may include:	• hand signals • horn and/or whistle • safety lights

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	• cap lamp • emergency communication and signaling procedures
Documentation may include:	• end of shift documentation • work log • supplies log • computer readings • personal danger tags • warning tags
Plain English presenting can be defined as information which is:	• visually inviting • logically organised • understandable on the first reading • in an order the reader will understand

Unit Sector(s)

Communication

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICOM301B Communicate information

Modification History

Not applicable.

Unit Descriptor

This unit covers the communication of information in resources and infrastructure industries. It includes: communicating information orally and in writing; achieving meeting outcomes; making presentations, and participating in negotiations.

Application of the Unit

This unit is appropriate for those working in operational roles or as members of committees, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Communicate information orally	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Analyse and clarify the purpose of the oral ***communication*** with the other parties 1.3. Adopt a suitable oral communication style to match the communication purpose and audience 1.4. Deliver oral information to others that is clear, succinct and unambiguous 1.5. Check the received information with the listener(s) to ensure it has been received accurately and understood 1.6. Listen carefully and intently to oral information that is received from others 1.7. Check the meaning with the speaker to ensure that the information has been received accurately and understood
2. Communicate information in writing	2.1. Analyse and confirm the purpose or objective of the ***written communication*** 2.2. Format and present the document according to current industry and enterprise practice 2.3. Organise the document logically so it is structured and balanced according to the purpose, audience and context 2.4. Ensure the written language is applicable to the communication purpose and audience 2.5. Ensure the written information is clear, succinct and unambiguous 2.6. Ensure conclusions reached are logically justified and reflect the purpose of the written communication 2.7. Complete preparation and the communication process within any specified time frame and to industry and worksite requirements
3. Achieve meeting outcomes	3.1. ***Prepare for the meeting*** to cover all requirements in a timely and effective manner 3.2. Clarify the purpose of a meeting with all of

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	those participating 3.3. ***Conduct the meeting*** effectively in accordance with standard procedures 3.4. Record accurately the outcomes of an official meeting and promptly provide minutes of the meeting to all participants 3.5. Document accurately all required action flowing from decisions reached at a meeting 3.6. Notify promptly persons responsible for implementing action from decisions at a meeting and confirm in writing details of the required action 3.7. Take appropriate follow-up action to ensure that all decisions of a meeting are acted upon as required
4. Make a presentation	4.1. Identify and clarify the purpose of a presentation and, where appropriate, confirm with the intended audience 4.2. Organise the information to be communicated in a presentation and structure it in accordance with contemporary presentation techniques and practice 4.3. Identify, evaluate and select the ***media resources*** available to use for the presentation 4.4. Organise and prepare ***presentation aids*** in advance, in accordance with recognised standards of good practice 4.5. Check resources and presentation aids where possible prior to the presentation to ensure that they are functioning properly 4.6. Make the presentation as planned with appropriate response to the reactions and feedback provided by the audience 4.7. Evaluate the outcomes of the presentation and act upon the findings
5. Participate in negotiations	5.1. Make adequate ***preparation for the negotiation*** 5.2. Select a suitable negotiation strategy in accordance with the relevant requirements, including the location, time and approach to be taken

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	5.3. Conduct negotiations in accordance with the planned approach 5.4. Review negotiation outcomes in terms of desired outcomes of the parties and initiate suitable further action, if required 5.5. Carry out all required follow-up action to the negotiations, including further discussions with the parties, if necessary 5.6. Document outcomes of the negotiation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to communicate information in the workplace:

- apply legislative, organisation and site requirements and procedures
- apply research and interpretative skills to locate, interpret and apply relevant operational information
- apply technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret work procedures and processes
- apply plain English speaking and communication skills in relation to oral communications with supervisors and other employees both informally and in making formal presentations
- apply questioning and active listening skills, for example when obtaining information on technical working practices
- apply writing skills to allow effective written communications in the workplace
- apply effective listening and interpersonal skills to enable effective communication in meetings and negotiations
- apply planning and organising skills sufficient to prepare and manage communication processes covered in this unit
- apply teamwork skills sufficient to involve and engage the employers/supervisors in the communication processes
- apply problem solving skills to assess technical industry issues

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to communicate information in the workplace:

- legislation and regulations
- the theory of industry based communication requirements and systems
- the topic or subject area which is the target for the communication
- the factors for effective oral communication
- the site conventions and requirements for written communications including report writing
- meeting procedures and follow-up requirements
- preparing for and conducting a presentation
- basic negotiating techniques and their application

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to communicate information • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the communication of information • working with others to undertake and complete the communication of information that meets all of the required outcomes • consistent timely completion of the communication of information that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace context. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the communication of information

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Communication may be:	• face to face • in writing • by telephone • by electronic means • formal • informal
Written communication may be prepared and stored in hard copy or electronic form and may include:	• memos • letters • reports
Meeting preparation may include:	• arrangements for the venue • issue of the notice of meeting to attendees and other interested parties • circulation of agenda and other papers • arrangements for visiting speakers • venue set up on the day
Meeting conduct may include:	• the handling of apologies • minutes • motions • discussion • voting • recording of outcomes according to industry • mine site conventions and rules of procedure
Media resources may include:	• the hardware aspects of projectors • computers

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	• screens • telecommunications equipment • audio/visual equipment
Presentation aids may include:	• overhead transparencies • slides • computer software materials • presentation notes • hand-outs • computer disks • videos
Negotiation preparation may include:	• full consideration of the subject matter • the significance of the outcomes for the parties involved • the facts • the issues and options • the perceived/anticipated positions of the parties involved

Unit Sector(s)

Communication

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICOM302A Communicate workplace information

Modification History

Not applicable.

Unit Descriptor

This unit covers the informal communication of information in the resources and infrastructure industries. It includes: gathering and interpreting information, communicating and analysing information, and participating in informal negotiations.

Application of the Unit

This unit is appropriate for those working in operational roles or as members of committees, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather and interpret information	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access information and data from a variety of ***information sources*** and ***communication systems*** 1.3. Seek additional necessary information 1.4. Interpret information and apply it to the ***work activity***
2. Communicate information	2.1. Analyse and confirm the purpose of the ***communication*** with other parties 2.2. Participate in meetings and other information sharing events 2.3. Organise the communication logically so it is structured and balanced according to the purpose, ***audience*** and context 2.4. Deliver information that is clear, succinct and unambiguous and ensure the language is applicable to the communication purpose and ***audience*** 2.5. Check delivered information with the ***audience*** to ensure it has been received accurately and is understood 2.6. Listen actively to oral information that is provided by others 2.7. Communicate appropriate responses to questions, reactions and feedback provided by the audience
3. Participate in informal negotiations	3.1. Make adequate ***negotiationpreparations*** 3.2. Confirm the purpose or objective of the ***negotiations*** 3.3. Select a suitable negotiation approach in accordance with the purpose and relevant requirements, including location and time 3.4. Carry out negotiations in a collaborative manner 3.5. Recognise and allow for compromise whilst maintaining ***non-negotiable standards*** 3.6. Ensure conclusions reached are logically justified and reflect the purpose of the

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	discussion 3.7. Carry out all required follow-up action, including documentation and further discussions with the parties, if necessary

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to communicate information in the workplace:

- apply legislative, organisation and site requirements and procedures
- apply research and interpretative skills to locate, interpret and apply relevant operational information
- apply technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret work procedures and processes
- apply plain English speaking and communication skills in relation to oral communications with supervisors and other employees
- apply questioning and active listening skills, for example when obtaining information on technical working practices
- apply writing skills to allow effective written communications in the workplace
- apply effective listening and interpersonal skills to enable effective communication in meetings and negotiations
- apply planning and organising skills sufficient to prepare and manage communication processes covered in this unit
- apply teamwork skills sufficient to involve and engage the employers/supervisors in the communication processes

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to communicate information in the workplace:

- legislation and regulations
- the topic or subject area which is the target for the communication
- the factors for effective oral communication
- the site conventions and requirements for written communications including report writing
- meeting procedures and follow-up requirements
- basic negotiating techniques and their application

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to communicate workplace information • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the communication of workplace information • working with others to undertake and complete the communication of workplace information that meets all of the required outcomes • consistent timely completion of the communication of workplace information that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace context. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the communication of workplace information

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • sustainability practices
Information sources may be:	• meetings • pre-shift presentations • cross-shift conversations • authorisations and work orders • Standard Operating Procedures (SOPs) and Safe Work Instructions (SWIs) • drawings and diagrams • plans and maps • permits • Materials Safety Data Sheets (MSDS) • performance agreements • mine site policies

Communication systems may be:	• email
	• Pit Ram/Scada
	• signalling methods
	• modular mining
	• written communication such as:
	  • hard copy of electronic communications
	  • memos
	  • letters
	  • reports etc
	• noticeboards
	• two-way-radios
	• telephone systems

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Work activity may be:	• single tasks • groups of tasks to achieve a specific objective
Communication may be:	• face-to-face • in writing • by telephone • by electronic means • formal • informal • one-to-one • to groups
Audience may be:	• groups • individuals • managers • colleagues • contractors • visitors to site • tenderers
Negotiation preparation may include:	• the consideration of the subject matter • defining a position on the matter • the significance of the outcomes for the parties involved • the anticipated positions of the parties involved • the presentation of the facts • the issues relating to the matter and possible options for compromise
Negotiations are:	• discussions with supervisors, work group/team members and other audiences, as defined above, relating to issues or concerns that may impact on the operator's ability to carry out day-to-day operations and achieve work objectives
Non-negotiable standards may include:	• organisational procedures including emergency and safety • legislated standards

Unit Sector(s)

Communication

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICPL301A Install water mains pipelines

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of water mains pipelines in the civil construction industry. It includes planning and preparing, setting out and excavating, installing mains pipeline, testing mains pipe system, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain ***safety requirements*** from the site safety plan 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Set out and excavate	2.1. Prepare work area and ***materials*** to support the efficient ***installation*** of the pipe work 2.2. Determine and apply dewatering requirements 2.3. Determine location, alignment direction, level and grade of ***mains pipe system*** from job drawings/specifications 2.4. Set out works to specification 2.5. Advise plant operator of excavation requirements and monitor levels 2.6. Install mains pipe system ***support mechanism*** in accordance with plans, specifications and standards
3. Install mains pipeline	3.1. Lower and place pipes in position to design specifications 3.2. Join pipes in accordance with manufacturer's specifications 3.3. Place pipes and fit ***valves***, fittings and flow control devices in accordance with drawings and specifications 3.4. Check continuously alignment level and grade for conformance with design plans and specifications 3.5. Position side support and/or overlay beside the pipes 3.6. Check mains pipe system support structure

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	3.7. Monitor backfill procedure to ensure work is completed to specification 3.8. Construct valve chambers, minor structures and thrust blocks
4. Test mains pipe system	4.1. Perform ***test*** to relevant authority requirements as determined by the specifications 4.2. Perform mains pipe system test procedures establishing pressurisation, functionality and serviceability 4.3. Record and report test results
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install water mains pipelines:

- apply legislative, organisation and site requirements and procedures for installation of water mains pipelines
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install water mains pipelines:

- civil construction terminology
- site and equipment safety requirements
- mains pipe systems and installation procedures
- confined space entry requirements
- dewatering
- concrete and concrete fabrication
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures including testing procedures
- mains water pressure
- valves and flow control devices
- water reticulation
- processes for the calculation of pipeline grades and percentages
- sedimentation and erosion controls
- excavation/trench safety
- site isolation and traffic control responsibilities and authorities
  - materials safety data sheets and materials handling methods
  - project quality requirements
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installation of water mains pipelines • implementation of requirements, procedures and techniques for the safe, effective and efficient installation of water mains pipelines • working with others to undertake and complete the installation of water mains pipelines that meets all of the required outcomes • consistent timely installation of water mains pipelines that safely, effectively and efficiently meets the required outcomes • installation of a minimum of 100 metres of water mains pipeline to design specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of water mains pipelines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • work instructions, including plans, specifications, quality requirements and operational details
Safety requirements include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control, and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with underground services, other machines, personnel, restricted access barriers, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, underground services, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • emergency procedures including emergency

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	shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Signage for traffic control may include:	• escort vehicles • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• levelling equipment • shovels • lifting equipment • crow bars • hammers • grinders • jointing equipment • oxy-acetylene equipment, • scaffolding • saws
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Materials may include:	• pic • backfill • bedding materials
Installation procedures may include:	• selecting size, type and materials of pipe • bedding down pipes • positioning pipes • checking alignment, level and grade • repair work

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Mains pipe system may include:	• pressurised mains water pipelines • in-ground and above ground systems • pipes constructed from PVC, UPVC, poly, DICL, steel and copper

Support mechanism may include:	• bedding for in-ground trenches which may include:
	  • aggregate
	  • sand
	• concrete shoulders for above ground pipes

Valves may include:	• stop valves • flow control valves • non return valves • pressure control valves • energy dissipaters and air release valves
Test may include:	• pressure • visual straightness • quality • tolerance • air • water

Unit Sector(s)

Underground Services

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICPL302A Install stormwater systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of stormwater systems in the civil construction industry. It includes planning and preparing, setting out and excavating, installing the stormwater system, testing the stormwater system, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain ***safety requirements*** from the site safety plan 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Set out and excavate	2.1. Prepare work area and ***materials*** to support the efficient ***installation*** of the ***pipe*** work 2.2. Determine and apply dewatering requirements 2.3. Determine location, alignment direction, level and grade of ***stormwater system*** from job drawings/specifications 2.4. Set out works to specification 2.5. Advise plant operator of excavation requirements and monitor levels 2.6. Install stormwater system ***bedding*** in accordance with plans, specifications and standards
3. Install stormwater system	3.1. Lower pipes and place in position to design specifications 3.2. ***Join*** pipes in accordance with manufacturer's specifications 3.3. Check alignment level and grade continuously for conformance with design plans and specifications 3.4. Position side support and/or overlay beside the pipes 3.5. Fit inspection openings in accordance with job specifications 3.6. Monitor backfill procedure to ensure work is completed to specification, where

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	specified
4. Test stormwater system	4.1. Perform test to relevant authority requirements as determined by the specifications 4.2. Perform stormwater system ***test procedures*** establishing functionality and serviceability 4.3. Record and report test results
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install stormwater systems:

- apply legislative, organisation and site requirements and procedures for installation of stormwater systems
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install stormwater systems:

- civil construction terminology
- site and equipment safety requirements
- mains pipe systems and installation procedures
- confined space entry requirements
- dewatering
- concrete and concrete fabrication
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures including testing procedures
- mains water pressure
- valves and flow control devices
- water reticulation

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing stormwater systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installation of stormwater systems • working with others to undertake and complete the installation of stormwater systems that meets all of the required outcomes • consistent timely completion of the installation of stormwater systems that safely, effectively and efficiently meets the required outcomes • installation of a minimum of 100 metres of stormwater pipe to design specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of stormwater systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control, and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with underground services, other machines, personnel, restricted access barriers, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, underground services, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • emergency procedures including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation

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Signage for traffic control may include:	• escort vehicles • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• levelling equipment • shovels • lifting equipment • crow bars • hammers • grinders • jointing equipment • oxy-acetylene equipment • scaffolding • saws
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Materials may include:	• pipes • concrete • backfill • bedding materials
Installation procedures may include:	• selecting size, type and material of pipe • bedding down pipes • positioning pipes • checking alignment, level and grade • fitting inspection holes • repair work where required

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Pipe may include:	• stormwater pipes constructed from
	  • reinforced concrete (RCP)
	  • PVC
	  • Steel
	  • fibre reinforced concrete (FRC)
	  • DICL

Stormwater systems are to include:	• only in-ground
Bedding may include:	• aggregate • sand
Join may include:	• rubber ring • solvent welded • arc welded • mechanical jointed
Test procedures may include:	• visual straightness • ovality • tolerance • air • water

Unit Sector(s)

Underground Services

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICPL303A Install sewer pipelines

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of sewer pipelines in the civil construction industry. It includes planning and preparing, setting out and excavating, installing sewer pipeline, testing sewer pipeline, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain ***safety requirements*** from the site safety plan 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Set out and excavate	2.1. Prepare work area and ***materials*** to support the efficient ***installation*** of the ***pipe*** work 2.2. Determine and apply dewatering requirements 2.3. Determine location, alignment direction, level and grade of ***sewer pipeline*** from job drawings/specifications 2.4. Set out works to specification 2.5. Advise plant operator of excavation requirements and monitor levels 2.6. Install sewer pipeline ***bedding*** in accordance with plans, specifications and standards
3. Install sewer pipeline	3.1. Lower pipes and place in position to design specifications 3.2. ***Join*** pipes in accordance with manufacturer's specifications 3.3. Place pipes and fit ***valves***, ***fittings and flow control devices*** in accordance with drawings and specifications 3.4. Check alignment level and grade continuously for conformance with design plans and specifications 3.5. Position side support and/or overlay beside the pipes 3.6. Check sewer pipeline system support

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	structure 3.7. Monitor backfill procedure to ensure work is completed to specification, where required 3.8. Construct manholes, inspection and valve chambers, minor structures and thrust blocks
4. Test sewer pipeline	4.1. Perform test to relevant authority requirements as determined by the specifications 4.2. Perform sewer system ***test procedures*** establishing functionality and serviceability 4.3. Record and report test results
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install sewer pipelines:

- apply legislative, organisation and site requirements and procedures for installation of sewer pipelines
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install sewer pipelines:

- site and equipment safety requirements
- sewer pipelines and installation procedures
- civil construction terminology
- processes for the calculation of pipeline grades and percentages
- sedimentation and erosion control
- excavation/trench safety
- confined space entry requirements
- dewatering
- concrete and concrete fabrication
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures including testing procedures
- valves and flow control devices
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing sewer pipelines • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installation of sewer pipelines • working with others to undertake and complete the installation of sewer pipelines that meets all of the required outcomes • consistent timely completion of installation of sewer pipelines that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of sewer pipelines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control, and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with underground services, other machines, personnel, restricted access barriers, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, underground services, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • emergency procedures including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation

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Signage for traffic control may include:	• escort vehicles • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• levelling equipment • shovels • lifting equipment • crow bars • hammers • grinders • jointing equipment • oxy-acetylene equipment • scaffolding • saws
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Materials may include:	• pipes • concrete • backfill • bedding materials
Installation procedures may include:	• selecting size, type and material of pipe • bedding down pipes • positioning pipes • checking alignment, level and grade • repair work
Pipe may include:	• DICL • UPVC

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	• clay
Sewer pipeline are to include:	• only in-ground
Bedding may include:	• Aggregate • sand
Join may include:	• rubber ring • solvent welded • arc welded • mechanical joint
Valves, **fittings and flow control devices** may include:	• stop valves • non return valves • flow control valves • air release valves • waste and leak detection meters
Test procedures may include:	• visual straightness • ovality • tolerance • air • water

Unit Sector(s)

Underground Services

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICPL304A Install pre-cast gully pits

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of pre-cast gully pits in the civil construction industry. It includes planning and preparing, installing gully pits, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain ***safety requirements*** from the site safety plan 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Install gully pits	2.1. Advise plant operator of excavation and base preparation requirements 2.2. Determine ***location*** and positioning of ***gully pit*** from plans and drawings 2.3. Set out work area safely to design specifications 2.4. Control ingress of water by ***dewatering*** 2.5. Position, fabricate or ***install*** main components of the pre-cast unit to design specifications 2.6. Seal finished surface by rendering where specified 2.7. Position and attach ***auxiliary components*** or modifications to pre-cast unit according to design specifications where specified 2.8. Inspect new and existing gully pits for damage or wear and repair in accordance with specifications
3. Clean up	3.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 3.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install pre-cast gully pits:

- apply legislative, organisation and site requirements and procedures for installation of pre-cast gully pits
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install pre-cast gully pits:

- site and equipment safety requirements
- gully pits
- civil construction terminology
- sedimentation and erosion control
- excavation/trench safety
- stormwater systems
- confined space entry requirements
- dewatering
- concrete and concrete fabrication
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing pre-cast gully pits • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installation of pre-cast gully pits • working with others to undertake and complete the installation of pre-cast gully pits that meets all of the required outcomes • consistent timely completion of installation of pre-cast gully pits that safely, effectively and efficiently meets the required outcomes • installation of a minimum of two gully pits for stormwater systems to design specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of pre-cast gully pits

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control, and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with underground services, other machines, personnel, restricted access barriers, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, underground services, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • emergency procedures including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation

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Signage for traffic control may include:	• escort vehicles • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• levelling equipment • shovels • lifting equipment • hammers • grinders • oxy-acetylene equipment • scaffolding • trowels
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Location of gully pits may include:	• roads • verges • private properties
Gully pit may include:	• pre-cast unit sections • use only as stormwater systems
Dewatering may include:	• wells • trenches • sumps • pits • submersible pumps • vacuum pumps • surface pumps • sludge pumps

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Install procedures may include:	• selecting size, type and material of pit • positioning gully pits • rendering • attaching auxiliary components • making or attaching modifications • repair work
Auxiliary components may include:	• covers • steps • conversion slabs • benching
Materials may include:	• concrete • bedding materials • pre-cast components • jointing materials (silicon, mastic or epoxy) • cement render

Unit Sector(s)

Underground Services

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICPL305A Install pre-cast access chambers

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of pre-cast access chambers in the civil construction industry. It includes planning and preparing, installing access chambers, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain ***safety requirements*** from the site safety plan 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Install access chambers	2.1. Advise plant operator of excavation and base preparation requirements 2.2. Determine ***location*** and positioning of ***access chamber*** from plans and drawings 2.3. Set out work area to design specifications 2.4. Control ingress of water by ***dewatering*** 2.5. Position, fabricate or ***install*** main components of the pre-cast unit to design specifications 2.6. Seal by rendering finished surface where specified 2.7. Position ***auxiliary components*** or modifications and attach to pre-cast unit according to design specifications where specified 2.8. Inspect new and existing access chambers for damage or wear and repair
3. Clean up	3.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 3.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install pre-cast access chambers:

- apply legislative, organisation and site requirements and procedures for installation of pre-cast access chambers
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install pre-cast access chambers:

- site and equipment safety requirements
- access chambers
- civil construction terminology
- sedimentation and erosion control
- excavation/trench safety
- sewerage systems
- confined space entry requirements
- dewatering
- concrete and concrete fabrication
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installation of pre-cast access chambers • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installation of pre-cast access chambers • working with others to undertake and complete the installation of pre-cast access chambers that meets all of the required outcomes • consistent timely completion of installation of pre-cast access chambers that safely, effectively and efficiently meets the required outcomes • installation of a minimum of two access chambers to design specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of pre-cast access chambers

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control, and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with underground services, other machines, personnel, restricted access barriers, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, underground services, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • emergency procedures including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation

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Signage for traffic control may include:	• escort vehicles • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• levelling equipment • shovels • lifting equipment • hammers • grinders • oxy-acetylene equipment • scaffolding • trowels
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Location may include:	• roads • verges • private properties
Access chamber may include:	• pre-cast unit sections • usage to include sewerage and stormwater pipelines
Dewatering methods may include:	• wells • trenches • sumps • pits • submersible pumps • vacuum pumps • surface pumps

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	• sludge pumps
Install procedures may include:	• selecting size, type and material of chamber • positioning access chambers • rendering • attaching auxiliary components • making or attaching modifications • repair work
Auxiliary components may include:	• covers • steps • conversion slabs • benching
Materials may include:	• concrete • bedding materials • pre-cast components jointing materials (silicon, mastic or epoxy) • cement render

Unit Sector(s)

Underground Services

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICPL401A Apply the principles for the installation of underground service using open excavation

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision for the installation of underground service using open excavation tasks in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting for the installation of underground service using open excavation tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for the installation of underground service using open excavation tasks within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***installation of underground service using open excavation tasks*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** the installation of underground service using open excavation task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise the installation of underground service using open excavation tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - tonnage required
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret underground service materials properties and test results

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- provide recommendations for the improvement of the safe, effective and efficient execution for the installation of underground service using open excavation tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise the installation of underground service using open excavation tasks:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational Health and Safety requirements and procedures
- shoring requirements and procedures
- slope management requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- open excavation underground service installation plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution for the installation of underground service using open excavation tasks
- open excavation underground service installation resource requirements and procedures
- activities scheduling requirements and procedures
- open excavation underground service installation materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- open excavation underground service installation monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- installation of underground services and related activities' terminology

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- set out requirements and procedures
- drainage requirements
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of installation of underground service using open excavation tasks • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of installation of underground service using open excavation tasks • working with others to plan, prepare and conduct for the installation of underground service using open excavation tasks • provision of clear and timely instruction and supervision by the individual of those involved in the installation of underground service using open excavation tasks • evidence of the consistent successful supervision for the installation of underground service using open excavation tasks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the installation of underground service using open excavation tasks
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the installation of underground service using open

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	excavation tasks
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Installation of underground service using open excavation	• water mains pipelines • stormwater systems, including:

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tasks may include:	• pipes • box culverts • pre-cast gully pits • sewage pipelines • gas pipelines • other conduits for services such as: • telecommunication cables • data cables • power cables
Open excavation may include:	• shored trenches • open trenches • excavation by trenching machine or other earthmoving equipment
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational Health and Safety requirements • shoring and slope management requirements • sub-contractor support requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • shoring materials • sub-contractor services
Instructions are to include:	• briefings • handovers

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	• work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Underground Services

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICRC201A Repair potholes

Modification History

Not applicable.

Unit Descriptor

This unit covers the repairing of potholes in the civil construction industry. It includes planning and preparing for work, repairing potholes, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and apply relevant drawings and job specifications to all work activities 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Repair potholes	2.1. Remove water and loose ***material*** from ***pothole*** or defective area 2.2. Trim pothole/defect to ensure mechanical interlock of repair material 2.3. Apply binder to provide adequate adhesion of repair material and waterproofing of repaired area 2.4. Place and compact materials to specification 2.5. Clean repaired area, remove excess loose materials, and apply sand or blinding material where specified
3. Clean up	3.1. Clear work area and recycle or dispose of materials in accordance with project environmental management plan 3.2. Clean, check, maintain and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to repair potholes:

- apply legislative, organisation and site requirements and procedures for repair potholes
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to repair potholes:

- the types and causes of potholes
- type, uses, limitations and safety requirement of pothole repair equipment and materials
- pothole repair techniques
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- work recording techniques including specifications, check-lists and drawings
- materials handling methods
- project quality requirements
- civil construction terminology
- road maps and map reading techniques
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for repairing potholes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of pothole repairs • working with others to undertake and complete the repair of potholes in a way that meets all of the required outcomes • consistent timely completion of pothole repairs that safely, effectively and efficiently meets the required outcomes • preparation, repair and clean up of a minimum of three potholes including at least two to sub-grade level, using specified materials: the repairs are to be in accordance with the prescribed job specification
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity • Aboriginal people and other people from a non English speaking background may have second language issues • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the repair or potholes

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• road • pedestrian • airfield • hardstand • carparks • bikeway pavements
Tools and equipment may include:	• spades • shovels • rakes • quick-cut saws • jack hammers • vibrating plates • pedestrian rollers • crow bars • hand tampers • picks • emulsion/binder applicators • rammers
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Materials may include:	• granular pavement materials • water • pre-mix preparations • hot mix bituminous preparations • cold mix bituminous preparations • sand • binding materials
Pothole may include making repairs to the:	• sub-grade • pavement • sub-base • base • wearing surface

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Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC202A Install signs

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of signs in the civil construction industry. It includes planning and preparing, transporting sign and materials to the site, assembling the signs, erecting the signs, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and apply relevant drawings and job specifications to all work activities 1.3. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Obtain permits and clearances in accordance with local government and state regulatory authority requirements 1.7. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Transport sign and materials to the site	2.1. Identify location of the site in accordance with job drawings and specifications 2.2. Arrange site access in accordance with organisation and site requirements 2.3. Determine availability of loading/unloading equipment 2.4. Arrange transportation of signage 2.5. Protect signs appropriately and pack them securely for transport 2.6. Load, transport and off-load signs and equipment correctly
3. Assemble sign	3.1. Lay out and check ***sign*** components prior to assembly 3.2. Assemble sign on or off site as appropriate
4. Erect sign	4.1. Determine method of erection according to job requirements 4.2. Prepare support ***materials*** according to drawings and specifications

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	4.3. Install fastenings to manufacturer's recommendations 4.4. Brace support structure safely 4.5. Erect sign efficiently and safely
5. Clean up	5.1. Clear work area and recycle or dispose of materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant and equipment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install signs:

- apply legislative, organisation and site requirements and procedures for sign installation
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install signs:

- the types, sizes and materials used for sign construction
- the effect of air movement and wind on signs
- basic principles of soil technology for civil works
- sign fixing and fastening options
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing signs • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the installation of signs • working with others to undertake and complete the installation of signs in a way that meets all of the required outcomes • consistent timely completion of the installation of signs that safely, effectively and efficiently meets the required outcomes • the loading, transportation, unloading and installation of a minimum of three different free standing signs with at least one being a free standing sign requiring the installation of dual supports
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of signs

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Tools and equipment may include:	• crow bars • picks • shovels • spanners • hammers • screwdrivers • saws • concrete mixers • ladders • mechanical plant • jack hammers • compaction equipment • explosive power tools • augers • post hole diggers • scaffolding • elevated work platforms • traffic control devices
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Signs may include:	• permanent free standing • mountable types • temporary construction site signage

Materials may include:	• Signage materials, which may include:
	  • timber
	  • glass
	  • plastic
	  • metal
	  • polystyrene foam
	  • vinyl
	  • masonry

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	• brackets and fastenings • bolts • bearers and uprights • footing materials including concrete and framework materials • Materials encountered on site, which may include: • clays • silts • stone • gravel • mud • rock • sand • topsoil • concrete • bituminous mixes

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC203A Install sub-soil drainage

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of sub-soil drainage in the civil construction industry. It includes planning and preparing, setting out and excavating trenches, installing bedding materials, installing sub-soil drainage, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and apply relevant drawings and job specifications to all work activities 1.3. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set out and excavate trenches	2.1. Check trench depths and grades to ensure conformity with plans and specifications 2.2. Set out and clearly mark trench location 2.3. Communicate with plant operator to ensure correct excavation of trenches, placement of shoring and battering
3. Install bedding materials	3.1. Determine ***bedding material*** type and depth from plans and specifications 3.2. Lay bedding materials to specified depths and grades
4. Install sub-soil drainage	4.1. Place geo-textile according to specifications 4.2. Prepare drain sections and fittings 4.3. Lay subsoil drain 4.4. Provide inspection opening and flush out points according to plans 4.5. Fit out and/or connect end structures/outlets/clean outs to culverts, storm water or ***subsoil drain systems*** 4.6. Install packing and prepare system for backfilling

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	4.7. Monitor backfill procedure to ensure work completed to specification
5. Clean up	5.1. Clear work area and recycle or dispose of ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install sub-soil drainage:

- apply legislative, organisation and site requirements and procedures for installing sub-soil drainage
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install sub-soil drainage:

- site and equipment safety requirements
- sub-soil drainage systems and installation procedures
- concrete and concreting
- equipment types, characteristics, technical capabilities and limitations
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for sub-soil drainage installations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of sub-soil drainage installation • working with others to undertake and complete the installation of sub-soil drainage in a way that meets all of the required outcomes • consistent timely completion of sub-soil drainage installation that safely, effectively and efficiently meets the required outcomes • installation of a minimum of 100 metres of sub-soil drain in two separate locations, including end structures or outlets to design specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of sub-soil drainage

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Tools and equipment may include:	• levelling equipment • tape measures • shovels • hand saws • cutting knives • crow bars • hammers • trowels • formwork
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Bedding materials may include:	• aggregate • sand
Subsoil drainage systems may include:	• strip filter drains and perforated pipes with or without geo-textile fabric • granular materials enclosed in geo-textile fabric
Materials may include:	• marking materials • strip filter drains • perforated pipes • geo-textile fabric • pipe jointing materials • backfill and bedding materials • marker post • concrete • stones

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC204A Install and maintain roadside fixtures

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation and maintenance of roadside fixtures in the civil construction industry. It includes planning and preparing, installing guide posts and delineators, erecting guardrails, erecting road fencing, repairing roadside fixtures, maintaining signs, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and apply relevant drawings and job specifications to all work activities 1.3. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project traffic management plan 1.5. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Install guide posts and delineators	2.1. Set out job to alignment and locations according to job drawings and specifications 2.2. Excavate holes for poles to specification requirements 2.3. Install ***guideposts*** to specification 2.4. Install delineators to specification
3. Erect guardrails	3.1. Set out position of ***guardrails*** according to drawings 3.2. Finish guardrails according to specifications 3.3. Erect and/or install guardrails in the correct location
4. Erect road fencing	4.1. Set out and excavate positions of ***fence*** line and post hole 4.2. Install fence posts plumb and to alignment 4.3. Fit and fix rails, cladding mesh or panels
5. Repair roadside fixtures	5.1. Identify ***roadside fixture*** faults and determine methods of repair 5.2. Carry out repairs and routine maintenance

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6. Maintain signs	6.1. Maintain ***signs*** and support structures 6.2. Carry out repairs 6.3. Replace reflective patches in accordance with cyclic maintenance program
7. Clean up	7.1. Clear work area and recycle or dispose of ***materials*** in accordance with project environmental management plan 7.2. Store or stack unused materials 7.3. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install and maintain roadside fixtures:

- apply legislative, organisation and site requirements and procedures for installing and maintaining roadside fixtures
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install and maintain roadside fixtures:

- roadside signage systems
- civil construction terminology
- types, characteristics and installation/ maintenance techniques of roadside and kerb fixtures
- types, characteristics and installation/ maintenance techniques of roadside fencing
- types, characteristics and installation/ maintenance techniques of roadside fixtures
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- project quality requirements
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for installing and maintaining roadside fixtures
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of roadside fixture installation and maintenance
	• working with others to undertake and complete the installation and maintenance of roadside fixtures in a way that meets all of the required outcomes
	• consistent timely completion of the installation and maintenance of roadside fixtures that safely, effectively and efficiently meets the required outcomes
	• as an individual or as a member of a two-three person team, undertake and complete the following:
	  • installation of 10 metres of guardrail and finish ends
	  • installation of two guide posts and delineators
	  • replacement of two signs, and
	  • erection of 10 metres of roadside fencing to specification

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills,

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	task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency.
	The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation and maintenance of roadside fixtures

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Signage may include:	• escort vehicles • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• crow bars • shovels • spanners • hammers • screwdrivers • mechanical plant • picks • saws • concrete mixers • ladders • restricted height scaffolding • EWPs
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Guideposts may include:	• timber • plastic • steel/galvanised • associated installation devices
Guardrails may be either:	• rigid • flexible
Fence may include:	• chainwire • mesh • plain wire • barbwire • netting

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Roadside fixtures may include:	• guard rails • guide posts • fencing • signs
Signs may include:	• traffic hazard signs • street signs and lights • speed signs • destination • information signs • tourist signs • supportive framework • poles • posts
Materials may include:	• aluminium sections • steel sections • timber • concrete • brackets and fastenings • bolts • bearers and uprights • paints • fencing materials • reflective materials • footing materials

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC205A Install utility poles

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of utility poles in the civil construction industry. It includes planning and preparing, erecting utility poles, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and apply relevant drawings and job specifications to all work activities 1.3. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.5. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Erect utility poles	2.1. Set out job to alignment and locations according to job drawings 2.2. Excavate holes for ***utility poles*** and/or bases 2.3. Install concrete base and holding down bolts 2.4. Erect poles and attach them plumb to cast in base to alignment 2.5. Stabilise and/or backfill poles to specifications
3. Clean up	3.1. Clear work area and recycle or dispose of ***materials*** in accordance with project environmental management plan 3.2. Store or stack unused materials 3.3. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install utility poles:

- apply legislative, organisation and site requirements and procedures for installing utility poles
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install utility poles:

- utility pole types, fittings, materials and erection techniques
- civil construction terminology
- electrical safety
- plant/crane capabilities and limitations
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- project quality requirements
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for install utility poles • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of utility poles installation • working with others to undertake and complete the installation of utility poles in a way that meets all of the required outcomes • consistent timely completion of the installation of utility poles that safely, effectively and efficiently meets the required outcomes • as an individual or as a member of a two-three person team, undertake and complete the installation of two utility poles to specification
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of utility poles

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades and traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• crow bars • picks • shovels • spanners • hammers • screwdrivers • concrete mixers • ladders • mechanical plant • EWPs
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Utility poles may include:	• roadside/street light poles • walkway light poles • traffic camera poles • services information poles
Materials may include:	• aluminium sections • steel sections • concrete • brackets and fastenings

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	• bolts • paints • utility poles • reflective materials • footing materials

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC206A Install pre-cast concrete crash barriers

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of pre-cast concrete crash barriers in the civil construction industry. It includes planning and preparing, erecting concrete crash barriers, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and apply relevant drawings and job specifications to all work activities 1.3. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Erect concrete crash barriers	2.1. Set out position of ***concrete crash barriers*** according to job drawings and specifications 2.2. Erect and/or install barriers in the correct location 2.3. Join barriers according to manufacturer's specifications 2.4. Seal and finish barriers against weather
3. Clean up	3.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 3.2. Store or stack unused materials 3.3. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install pre-cast concrete crash barriers:

- apply legislative, organisation and site requirements and procedures for installing pre-cast concrete crash barriers
- interpret engineering drawings
- select and use plant, tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- organise work tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install pre-cast concrete crash barriers:

- types, characteristics and installation/ maintenance techniques of roadside and kerb fixtures
- civil construction terminology
- types, characteristics and installation techniques of concrete crash barriers
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- plant/crane capabilities and limitations
- safe lifting techniques
- project quality requirements
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing pre-cast concrete crash barriers • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the installation of pre-cast concrete crash barriers • working with others to undertake and complete the installation of pre-cast concrete crash barriers in a way that meets all of the required outcomes • consistent timely completion of the installation of pre-cast concrete crash barriers that safely, effectively and efficiently meets the required outcomes • as an individual or as a member of a two-three person team, undertake and complete the installation of a minimum of 50 metres of pre-cast concrete road barriers to specification
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of pre-cast concrete crash barriers

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• crow bars • shovels • spanners • hammers • screwdrivers • concrete mixers • lifting equipment • cranes • mechanical plant
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Concrete crash barriers are to include:	• the erection of pre-cast concrete crash barrier units • block outs for the provision of services
Materials may include:	• concrete • brackets and fastenings • bolts • concrete crash barriers

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Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC207A Install noise barriers

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of noise barriers in the civil construction industry. It includes planning and preparing, erecting noise barriers, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and apply relevant drawings and job specifications to all work activities 1.3. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.5. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Erect noise barriers	2.1. Set out position of ***noise barrier*** line and post holes, and excavate to specifications 2.2. ***Install*** base section 2.3. Install uprights plumb and to alignment 2.4. Fit and fix rails, cladding or panels
3. Clean up	3.1. Clear work area and recycle or dispose of ***materials*** in accordance with project environmental management plan 3.2. Store and stack unused materials 3.3. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install noise barriers:

- apply legislative, organisation and site requirements and procedures for installing noise barriers
- interpret engineering drawings
- select and use plant, tools and materials safely
- organise work tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install noise barriers:

- civil construction terminology
- material/characteristics for noise barriers
- plant/crane capabilities and limitations
- safe lifting techniques
- types, characteristics and installation techniques of noise abatement systems
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- project quality requirements
- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing noise barriers • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of noise barrier installation • working with others to undertake and complete the installation of noise barriers in a way that meets all of the required outcomes • consistent timely completion of noise barrier installation that safely, effectively and efficiently meets the required outcomes • as an individual or as a member of a two-three person team, undertake and complete the installation of 50 metres of noise barriers
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of noise barriers

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• crow bars • picks • shovels • spanners • hammers • screwdrivers • saws • concrete mixers • ladders • mechanical plant • EWP • cranes • lifting equipment
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Noise barrier may include:	• steel • timber • pre-cast concrete • fibre cement panels

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	• glass • perspex structures
Install noise barriers may include:	• pre-cast post • panel methods of erection
Materials may include:	• aluminium sections • steel sections • timber • concrete • glass • perspex • fibre cement panel • masonry • brackets and fastenings • bolts • bearers and uprights • paints • footing materials

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC208A Lay pipes

Modification History

Not applicable.

Unit Descriptor

This unit covers the laying of pipes in the civil construction industry. It includes planning and preparing, setting out excavations, installing bedding materials, laying pipes, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan
2. Set out excavation	2.1. Determine location and depths of excavation from job drawings 2.2. Set out and clearly mark excavation location 2.3. Advise plant operator of excavation requirements 2.4. Check excavation depths and grades for conformity to job requirements 2.5. Compact and prepare foundation base for testing
3. Install bedding materials	3.1. Determine ***bedding material*** type and specification from plans and drawings 3.2. Lay and compact bedding materials to specified depths and grades
4. Lay pipe	4.1. Select, check and attach lifting apparatus to the ***pipe*** in preparation for lifting and ***installation*** for ***pipe joining*** 4.2. Prepare and specify pipe ends 4.3. Align pipe ends and push home 4.4. Check pipe for line and level 4.5. Advise plant operator of backfilling requirements and backfill and compact pipe to required finish level 4.6. Finish inlets and outlets in accordance with

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	pipe/culvert design specifications
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to lay pipes:

- apply legislative, organisation and site requirements and procedures for laying pipes
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to lay pipes:

- site and equipment safety requirements
- pipes and installation procedures
- confined space entry requirements
- dewatering
- concrete and concrete fabrication
- steel and PVC pipes
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- pipe types and characteristics
- basic soil types and characteristics
- excavation/trench backfilling techniques
- processes for calculation of pipe grades and percentages
- sedimentation and erosion control
- excavation/trench safety
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for laying pipes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of pipe laying • working with others to undertake and complete the laying of pipes that meets all of the required outcomes • consistent timely completion of pipe laying that safely, effectively and efficiently meets the required outcomes • installation of pipe on two different projects to a minimum of ten pipe joints listed in the Unit Scope: the pipes are to have a minimum diameter of DN225 mm
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the laying of pipes

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

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Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • plans, specifications and drawings • manufacturer's guidelines and specifications • Australian Standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures including emergency shutdown and stopping, organisational First Aid requirements and evacuation • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances from excavations are kept, and areas secured from unauthorised access or movement
Site may include:	• any ground conditions in urban and rural areas
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians

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	• barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• levelling equipment • shovels • lifting equipment • crow bars • hammers • grinders • jointing equipment • oxy-acetylene equipment • scaffolding • saws
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Bedding materials may include:	• aggregate and sand
Pipe may include:	• pipes used in the construction of road stormwater systems • pipes used in the construction of road culverts • concrete (RCP) • steel • fibre reinforced concrete (FRC) • ribbed PVC
Installation procedures may include:	• selecting size, type and material of pipes • bedding down pipes • positioning pipes • checking alignment, level and grade • fitting inlets and outlets • repair work where required
Pipe joining may include:	• sand band

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	• rubber ring • mechanical jointed
Materials may include:	• marking materials • pipes • concrete • backfill materials • bedding materials

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC209A Lay reinforced concrete box culverts

Modification History

Not applicable.

Unit Descriptor

This unit covers the laying of reinforced concrete box culverts in the civil construction industry. It includes planning and preparing, setting out and excavating, constructing concrete bases, laying culvert units, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task 1.6. Check ***RCBC*** units to ensure conformity
2. Set out and excavation	2.1. Determine location and depths of excavation from job drawings 2.2. Set out and clearly mark excavation location 2.3. Advise plant operator of excavation requirements 2.4. Check excavation depths and grades to conform with plans and specifications 2.5. Compact and prepare foundations base for testing
3. Construct concrete base	3.1. Set out and construct formwork to required dimensions 3.2. Place steel reinforcement to specifications 3.3. Form recesses in slab as specified 3.4. Connect and tighten hold down anchors to specified requirements 3.5. Place, compact, finish and cure concrete to specified requirements
4. Lay culvert units	4.1. Place continuous mortar bed to support legs 4.2. Lower and position RCBC units to line and level on supporting slab

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	4.3. Connect hold down anchors to RCBC units 4.4. Finish joints between RCBC units to specification 4.5. Infill space between legs of multiple culverts to specification 4.6. Install spanning slabs where specified for multiple culverts 4.7. Cut off and treat lifting lugs 4.8. Finish inlet and outlet of culvert 4.9. Advise plant operator of compaction and backfill requirements and backfill culvert to required finish level
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to lay reinforced concrete box culverts:

- apply legislative, organisation and site requirements and procedures for laying reinforced concrete box culverts
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to lay reinforced concrete box culverts:

- site and equipment safety requirements
- RCBC culverts and installation procedures
- confined space entry requirements
- dewatering
- concrete and concrete fabrication
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for laying reinforced concrete box culverts • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of reinforced concrete box culvert laying • working with others to undertake and complete the laying of reinforced concrete box culverts that meets all of the required outcomes • consistent timely completion of reinforced concrete box culvert laying that safely, effectively and efficiently meets the required outcomes • installation of thirty RCBC culvert units to design specifications • construction of a minimum of two RCBC support slabs
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the laying of reinforced concrete box culverts

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

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Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances from excavations are kept, and areas secured from unauthorised access or movement • hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures including emergency shutdown and stopping, organisational First Aid requirements and evacuation
Site may include:	• any ground conditions in urban and rural areas
Signage may include:	• escort vehicle signage • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades

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	• traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• levelling equipment • shovels • lifting equipment • crow bars • hammers • grinders • jointing equipment • oxy-acetylene equipment • scaffolding • saws
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
RCBC culverts may include:	• those units used in the construction of culverts under roads

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC301A Maintain drainage systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the maintenance of drainage systems in the civil construction industry. It includes planning and preparing, maintaining drainage components, excavating and repairing drainage systems, maintaining open drains, inspecting, clearing and repairing culverts, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project traffic management plan 1.4. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Determine temporary stormwater diversion requirement in accordance with existing drainage outlets, site requirements and planned schedule of construction 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Maintain drainage components	2.1. Regularly inspect and maintain ***drainage components*** and rectify or report faults 2.2. Repair drainage components as per initial design specifications and/or engineer's redesign 2.3. Flush out drainage system to clear blockages and provide clear flows of fluid
3. Excavate and repair drainage systems	3.1. Determine location of repairs from work order and confirm on site 3.2. Carry out excavation in accordance with task specifications and site safety plan 3.3. Prepare ***pipes*** and accessories in accordance with design method of repair 3.4. Replace pipe sections and ***join*** and align to line and specified fall 3.5. Install packing to maintain alignment of pipeline 3.6. Make joints to pipe section junctions in accordance with specification requirements

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	3.7. Backfill required section 3.8. Conduct inspection and testing of repaired drainage system to determine effectiveness of repairs
4. Maintain open drains	4.1. Maintain open drains to correct line and fall specifications 4.2. Finish surfaces adjoining open drains allowing ease of run off 4.3. Undertake adequate erosion control methods
5. Inspect, clear and repair culverts	5.1. Identify faults in ***culverts*** and determine appropriate repair requirements and specifications 5.2. Repair/replace sections and joint to levels and design specifications 5.3. Repair/maintain inlets and outlets in accordance with culvert design and specifications 5.4. Compact backfill
6. Clean up	6.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 6.2. Seal and store/pack in unused materials in accordance with standard material handling practices and techniques 6.3. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to maintain drainage systems:

- apply legislative, organisation and site requirements and procedures for maintaining drainage systems
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to maintain drainage systems:

- drainage types, characteristics, advantages and limitations
- basic flow theory
- basic principles of soil technology for civil works
- techniques for locating faults in drainage systems
- methods of joining pipes
- excavation techniques
- site and equipment safety requirements
- processes for interpreting engineering drawings and sketches
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- sedimentation and erosion control
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for maintaining drainage systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of drainage system maintenance • working with others to undertake and complete the maintenance of drainage systems that meets all of the required outcomes • consistent timely completion of drainage system maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the maintenance of drainage systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Tools and equipment may include:	• levelling equipment • tape measures • shovels • hand saws • cutting knives • crow bars • hammers • trowels • formwork
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Drainage components may include:	• gully/silt traps • inspection openings • manholes • benches • lining • step irons • lids • headstones • backstones • grates • kerbs • gutters • inlets and outlets • gabion baskets • rip rap • wingwalls • endwalls • aprons • reno-mattresses • geofabric • drain blocks • check dams

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	• sediment • silt control
Pipes may include:	• reinforced concrete • rigid PVC • flexible PVC • steel box culverts • clay pipes • fibre reinforced cement (FRC)
Join may include:	• sleeve joints with adhesives • socket and spigot with adhesives • socket and spigot with rubber rings • butt joints with outside bands • butt joints with inside rendering • flanged and bolted joining • welded connections
Culverts may include:	• reinforced concrete pipe sections • reinforced concrete box sections • steel pipe • FRC • PVC

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC302A Place and form concrete kerb, channel and fixtures

Modification History

Not applicable.

Unit Descriptor

This unit covers the placing and forming of concrete kerbs, channels and fixtures in the civil construction industry. It includes planning and preparing, setting out and preparing for construction/installation, forming kerb and barrier strips, pouring concrete to installed formwork, finishing kerbs, channels and fixtures, installing pre-cast concrete units, repairing kerb, gutters and median barrier strips, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project traffic management plan 1.4. Select **tools** and equipment to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set out and prepare for construction/ installation	2.1. Identify and protect existing services to prevent damage 2.2. Set out location of ***kerb***, ***channel and/or fixtures*** to dimensions from ***drawings*** and specifications or to pre-set pegs 2.3. Set out driveways and other inverts 2.4. Check grades to ensure correct fall 2.5. Construct formwork and check to ensure compliance with specifications 2.6. Complete ***services and conduit*** preparation in accordance with relevant procedures
3. Form kerb and barrier strips	3.1. Maintain vertical and horizontal alignment during concrete placement 3.2. Place concrete accurately to string line 3.3. Maintain concrete to specified standard 3.4. Mix and apply mortar at quality and quantity to achieve specified finish
4. Pour concrete to installed formwork	4.1. Place and compact concrete into formwork 4.2. Finish surface to alignment specifications 4.3. Remove face formwork without damage to concrete following concrete set
5. Finish kerbs, channels and	5.1. Finish job to shape in accordance with

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fixtures	specifications or to the relevant Australian standard 5.2. Finish concrete to specified quality and texture 5.3. Position expansion, construction and dowel joints to specification 5.4. Cure and protect finished work during process
6. Install pre-cast concrete units	6.1. Prepare base section and finish to specification for pre-cast unit installation 6.2. Install and join pre-cast concrete units
7. Repair kerb, gutters and median, barrier strips	7.1. Identify damaged areas, assess repair requirements and carefully remove or repair damaged section 7.2. Set up formwork or slip form machine and use to replace removed section 7.3. Place concrete accurately to correct alignment using concrete to the specified mix 7.4. Finish concrete to specification matching the shape of the kerb or gutter in place 7.5. Clear, backfill and finish area
8. Clean up	8.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 8.2. Clean, maintain, check and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to replace and form concrete kerb, channels and fixtures:

- apply legislative, organisation and site requirements and procedures for replacing and forming concrete kerb, channels and fixtures
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to replace and form concrete kerb, channels and fixtures:

- curbing profiles
- channelling and fixtures profiles and structural features
- concrete properties including the effects of weathering
- concreting and related formwork techniques
- concrete curing techniques
- types, characteristics, uses and limitations of forming machines
- the types of services and related conduit requirements
- site and equipment safety requirements
- processes for interpreting engineering drawings and sketches
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- set out techniques
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for placing and forming concrete kerbs, channels and fixtures • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of placing and forming concrete kerbs, channels and fixtures • working with others to undertake and complete the placing and forming of concrete kerbs, channels and fixtures that meets all of the required outcomes • consistent timely completion of concrete kerb, channel and fixture placement and forming that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the placing and forming of concrete kerbs, channels and fixtures

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • drawings and specifications • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

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	• emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• formed/prepared roads • access roads • pads • car parks • estates
Tools may include:	• shovels • rakes • trowels • forming tools • string lines and levels • concrete mixers • barrows • form machine • dumpy • laser levels
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Kerb, **channel and/or fixtures** may include:	• gutters • median and barrier strips • driveways • inverts
Drawings may include:	• site plans • cross-sectional plans • structural detail for kerbs • channels • fixtures
Services and conduits may include:	• power • gas • water • telecommunications • sub-soil drainage

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Materials may include:	• concrete and concrete reinforcing materials • formwork materials • conduit and tubing

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC303A Lay pavers

Modification History

Not applicable.

Unit Descriptor

This unit covers the laying of pavers in the civil construction industry. It includes planning and preparing for work, preparing to lay paving, laying pavers, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project traffic management plan 1.4. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task 1.6. Identify area and location of paving from job ***drawings*** 1.7. Calculate paving requirements and select ***material*** to meet required finish of surface and pattern
2. Prepare to lay paving	2.1. Set out location and shape of paving area to dimensions from job drawings 2.2. Carry out excavation to specified depth, allowing for base and thickness of unit 2.3. Position drainage pipes in sub-soil to local regulations 2.4. Prepare sub-soil and footing in accordance with specifications 2.5. Select base material in accordance with manufacturer's specifications for identified substrate 2.6. Clean surface free of loose material and dust where paving is to be bonded to substrate
3. Lay pavers	3.1. Position edge boards to set out and specifications 3.2. Spread sand and aggregate, and compact to specifications 3.3. Grade paving surface, where drainage is

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	necessary, to fall evenly without ponding to outlets or surface run off system provided 3.4. Mix mortar for masonry paving to specifications 3.5. Cut ***pavers*** to form edges ensuring fit and minimum wastage of material 3.6. Lay paving units to designed pattern 3.7. Complete edges to specification 3.8. Complete compaction, mortaring and sweeping work to specifications 3.9. Maintain finish level across junctions between different levels
4. Clean up	4.1. Finish paving clean to requirements 4.2. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.3. Clean, check, maintain and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to lay pavers:

- apply legislative, organisation and site requirements and procedures for laying pavers
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to lay pavers:

- basic principles of soil technology for civil works
- types, characteristics, uses and limitations of pavers
- techniques for preparing foundations and beddings for pavers
- foundation formwork techniques
- techniques for cutting and forming pavers
- techniques and patterns for laying pavers
- paver compaction techniques, equipment and tools
- finishing and edging techniques and processes
- site and equipment safety requirements
- processes for interpreting engineering drawings and sketches
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for laying pavers
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of paver laying
	• working with others to undertake and complete the laying of pavers that meets all of the required outcomes
	• consistent timely completion of paver laying that safely, effectively and efficiently meets the required outcomes
	• the laying of pavers (preparation, laying and finishing) which is to include a minimum of three separate jobs and cover a minimum of:
	  • two different paver shapes
	  • two different laying patterns
	  • one with curved edges
	  • one being a large area, and
	  • one being in a small restrictive space

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection

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	and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the laying of pavers

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Tools and equipment may include:	• hand tools • spreader bars • spirit/string levels • laser levels • trowels • rubber mallets • hammers • balustrades • brick saws • grinders • plate compactors • concrete mixers
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Drawings may include:	• site plans • cross sectional plans • laying patterns
Materials may include:	• pavers • base materials • concrete • mortar • formwork materials
Pavers may include:	• brick • stone • ceramic • concrete • quarry ***and may be laid on***: • footpaths • roads • cycle paths • malls

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	• podiums • sports arenas • platforms • recreational areas

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC304A Maintain sealed roads

Modification History

Not applicable.

Unit Descriptor

This unit covers the maintenance of sealed roads in the civil construction industry. It includes planning and preparing for work, storing, preparing and transporting materials, repairing damaged or wearing surfaces and edges, repairing pavement failures, repairing and sealing surface cracks, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project traffic management plan 1.4. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Store, prepare and transport materials	2.1. Store and maintain ***materials*** in quantity and specified condition for requirements of regular ***maintenance program*** 2.2. Prepare materials in accordance with specified mix 2.3. Load, transport and unload materials in a safe manner to minimise spillage and water
3. Repair damaged or wearing surface and edges	3.1. Identify faults in roads and pavements and apply appropriate repair method 3.2. Remove water and loose material from damaged section 3.3. Trim section to provide adequate support to repair material 3.4. Prepare base and sides of sections to ensure bonding of repair material in accordance with specification 3.5. Place material and compact to specifications maintaining alignment of surface
4. Repair pavement failures	4.1. Remove water and loose material 4.2. Excavate failed area to create a firm base 4.3. Trim edges to ensure adequate adhesion of repair material

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	4.4. Place and compact material to specification maintaining alignment of surface
5. Repair and seal surface cracks	5.1. Identify cracks and surface drainage conditions to determine appropriate repair and sealing process 5.2. Clear cracks of foreign materials 5.3. Apply sealant to cracks and finish in accordance with road maintenance specifications
6. Clean up	6.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 6.2. Protect storm water systems by clearing debris and loose material 6.3. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to maintain sealed roads:

- apply legislative, organisation and site requirements and procedures for maintaining sealed roads
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to maintain sealed roads:

- site isolation and traffic control responsibilities and authorities
- type, uses, limitations and safety requirement of road maintenance repair equipment
- road maintenance and repair materials
- road maintenance repair techniques
- work recording techniques including specifications and check-lists
- setting out procedures
- processes for the calculation of material requirements
- materials handling methods
- project quality requirements
- site and equipment safety requirements including appropriate state or territory legislation, regulations and codes
- civil construction terminology
- road maintenance programs
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for maintaining sealed roads
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of sealed road maintenance
	• working with others to undertake and complete the maintenance of sealed roads that meets all of the required outcomes
	• consistent timely completion of sealed road maintenance that safely, effectively and efficiently meets the required outcomes
	• maintain a sealed road including:
	  • the dig-out and repair of a failed pavement
	  • the repair of damaged or wearing surface and edges, and
	  • the repair of seal surface cracks

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the maintenance of sealed roads

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational, job and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Exact highlighted text may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Plant may include:	• rollers • graders • skid-steer • backhoes • excavators • front-end loaders • tip-trucks • water carts • road maintenance unit • road patching truck
Tools and equipment may include:	• spades • shovels • rakes • quick-cut saws • jack hammer • vibrating plates • pedestrian rollers • crowbars • handsprayers
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Materials may include:	• pavement materials • water • pre-mix preparations • hot mix preparations • cold mix preparations • emulsion • crack sealants • concreting materials
Maintenance program may include the repair and maintenance of:	• pavement failures • edges • surface cracks

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Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC305A Conduct road construction paver screeding operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of road construction paver screeding operations in the civil construction industry. It includes planning and preparing, setting up paver screeds, operating paver screeds, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted ***task*** 1.3. Identify, obtain and implement signage requirements from the project ***traffic*** management plan 1.4. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set up paver screed	2.1. Set equipment to the correct levels to lay ***material*** to specifications 2.2. Set electronic equipment to check level 2.3. ***Set screed controls*** for correct operation
3. Operate paver screed	3.1. Identify site hazards associated with road construction ***paver screeding operations*** and use safe operating techniques to minimise risks 3.2. Adjust screed during operation to ensure work remains within specifications 3.3. Identify faults in the mat and take correct action to rectify faults 3.4. Monitor work of paver attendants and rollers to ensure they keep up with the paver 3.5. Maintain communication with paver operator to monitor progress of the job 3.6. Notify paver operator of problems with the base 3.7. Perform operator maintenance in accordance with manufacturer's instructions or organisation requirements
4. Clean up	4.1. Clean work area and dispose of or recycle

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	materials in accordance with the project environmental management plan 4.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct road construction paver screeding operations:

- apply legislative, organisation and site requirements and procedures for conducting road construction paver screeding operations
- apply legislative, organisation and site requirements and procedures for laying pavers
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct road construction paver screeding operations:

- site and equipment safety requirements
- paver screed operations
- aggregate and gravel types and sizes
- longitudinal and transverse joints
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material uniformity and travel speed
- materials safety data sheets and materials handling methods
- quality requirements
- civil construction terminology
- safe operating techniques in all terrain
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting road construction paver screeding operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of road construction paver screeding operations
	• working with others to undertake and complete the conduct of road construction paver screeding operations that meets all of the required outcomes
	• consistent timely completion of road construction paver screeding operations that safely, effectively and efficiently meets the required outcomes
	• conduct road construction screed paving operations on a minimum of two different material types/surface types and include the mandatory tasks of:
	  • three longitudinal joints (of at least 100m) constructed to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions
	  • six transverse joints constructed to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions
	  • 5ive sections of straight paving (one of at least 100 linear metres) to required thickness, uniformity, line and level, on

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	both matching and unsupported edge in accordance with project specifications and/or work instructions, and • three intersections to required thickness, uniformity, line and level, on both the matching and unsupported edge in accordance with project specifications and/or work instructions • one of the above tasks to include at least one mode of automatic screed levelling devices
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment

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	methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of road construction paver screeding operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• formed/prepared roads • pads • highways • freeways • car parks • airport runways • container yards • hard stands • footpaths and bikeways
Task may include:	• mixing and spreading granular materials • spreading concrete materials • mixing and spreading stabilised materials • spreading bituminous materials
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant*, *tools and equipment may include:	• shovels • measuring tapes • depth gauges • standard tool kits • string lines • thermometers • straight edges ***automatic screed levelling devices may include***: • grade sensors/averaging sensors • matching shoes • levelling beams • sonic and laser
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration

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	• dust and clean-up management
Materials may include:	• granular materials • aggregates • gravel • stabilised materials • bituminous materials
Set screed controls may include:	• the use of boards to correct the height for transverse joint construction • setting up string lines and sensors to job specifications • adjusting machine attachments to string line • preparing and setting a screed to achieve a specified level and texture of base
Paver screeding operations may include:	• ensuring uniform flow of material • electronic/manual levelling • augering • maintaining width of the screed • adjustment of the crown • transverse and longitudinal joints • manual screed level control • automatic screed level control

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC306A Conduct earthworks

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of earthworks in the civil construction industry. It includes planning and preparing work, setting out sub-grades, forming earthworks, placing and compacting sub-grading replacement materials, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project traffic management plan 1.4. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Correctly identify compaction standards and testing requirements 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set out sub-grade	2.1. Set out job to plan from survey controls 2.2. Establish profiles to line and level
3. Form earthworks	3.1. Inform plant operators of job requirements 3.2. Assess ***earthworks*** to ensure that the specified height is achieved, with allowances for the pavement courses and the overall dimensions 3.3. Monitor uniform layer thickness and moisture content to ensure consistency with specifications 3.4. Monitor stabilisation of existing ***material*** 3.5. Remove surface area protrusions to prevent damage to geo-synthetic material 3.6. Place geo-synthetic material to manufacturer's specifications
4. Place and compact sub-grade replacement materials	4.1. Identify, remove and store unsuitable material separately 4.2. Place imported replacement/stabilised material as specified 4.3. Inform roller operators of the required number of passes

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	4.4. Assess compaction process to ensure nominated number of passes are made to achieve uniform compaction across the subgrade
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct earthworks:

- apply legislative, organisation and site requirements and procedures for conducting earthworks
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct earthworks:

- type, uses and limitations of plant used for earthworks construction
- earthworks construction and sub grade preparation techniques
- work recording techniques including specifications, check-lists and drawings
- setting out procedures
- processes for the calculation of material requirements
- compaction and stabilisation techniques/methods
- plan reading and interpretation
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- responsibilities under the environmental management plan
- materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting earthworks • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of earthworks • working with others to undertake and complete the conduct of earthworks that meets all of the required outcomes • consistent timely completion of earthworks that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and conduct earthworks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• haul roads • formed/prepared roads • access roads • pads • dam walls
Plant may include:	• rollers • graders • skid-steers • dozers • scrapers • backhoes • excavators • front-end loaders • tip-trucks • water carts
Tools and equipment may include:	• levelling equipment • tape measure • string lines • include shovels • hand saws • crow bars • hammers
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Earthworks may include:	• cutting and filling with existing material • the forming of existing material • the replacement of unsuitable materials • the stabilising of unsuitable materials • the use of geo-synthetic material
Materials may include:	• soils • granular materials • stabilising materials

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	• geofabrics • water

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC307A Conduct road pavement construction

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of road pavement construction in the civil construction industry. It includes planning and preparing for work, setting out sub-base/bases, placing and spreading materials, compacting materials, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project traffic management plan 1.4. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set out sub-base/base	2.1. Set out job to plan from survey controls 2.2. Establish offset pegs/profiles to ***line and level*** as specified
3. Place and spread materials	3.1. Determine layer depth for spreading ***materials*** and inform plant operators accordingly 3.2. Direct trucks to correct location and specify the method of dispatching for load placement 3.3. Check moisture content of materials and adjust uniformly 3.4. Assess ***road pavement*** laying to ensure specified heights and the overall dimensions are achieved
4. Compact materials	4.1. Inform roller operators of the required number of passes 4.2. Assess compaction process to ensure the nominated number of passes are made to achieve uniform compaction across the pavement 4.3. Check pavement trimming to ensure specified tolerances are achieved
5. Clean up	5.1. Clear work area and dispose of or recycle

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	materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct road pavement construction:

- apply legislative, organisation and site requirements and procedures for conducting road pavement construction
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct road pavement construction:

- basic pavement materials types and their characteristics
- type, uses, limitations and safety requirement of road pavement structure construction equipment
- setting out procedures
- compaction methods
- site and equipment safety requirements including appropriate state or territory legislation, regulations and codes
- site isolation and traffic control responsibilities and authorities
- work recording techniques including specifications, check-lists and drawings
- processes for the calculation of material requirements
- plan reading and interpretation
- responsibilities under the environmental management plan
- materials handling methods
- project quality requirements
- civil construction terminology
- mechanical interlock and the effect of fines and moisture content on compaction
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting road pavement construction
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of road pavement construction
	• working with others to undertake and complete the conduct of road pavement construction that meets all of the required outcomes
	• consistent timely completion of road pavement construction that safely, effectively and efficiently meets the required outcomes
	• completion of the construction of a road pavement including the following, with the results gaining acceptance as being to specification:
	  • set out of base
	  • placement and spreading of materials
	  • compaction of materials

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and

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	infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of road pavement construction

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• haul roads • formed/prepared roads • access roads • pads • dam walls
Plant may include:	• rollers • graders • skid-steers • backhoes • paver • excavators • front-end loaders • tip-trucks • water carts
Tools and equipment may include:	• shovels • levelling equipment • string lines • crowbars • tape measures • handsaws • cutting knives • hammers • trowels • formwork
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Line and level may include:	• the use of a string line
Materials may include:	• gravel • rock • sand • blended materials • stabilised materials

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	• quarried products
Road pavement may include:	• all the materials above the sub-grade and below the wearing surface • may also be known as sub-base and/or base structure Construction of road pavement may include: • surface finish • the repair of surface defects

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC308A Conduct paver operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of paver operations in the civil construction industry. It includes planning and preparing conducting paver pre-operational checks, operating pavers, relocating pavers, carrying out operator maintenance, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and apply relevant drawings and job specifications to all work activities 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Conduct paver pre-operational checks	2.1. Carry out pre-start, start-up, park and shutdown procedures in accordance with site specific requirements 2.2. Check paver controls and functions for serviceability, focusing on brakes, implements or other attachments and manoeuvrability, and rectify or report any faults
3. Operate paver	3.1. Identify site hazards associated with ***paver*** operations and use safe operating techniques to minimise risk 3.2. Identify operating techniques for paver to achieve optimum output in accordance with manufacturer's design specifications while achieving specified tolerances 3.3. Operate paver to work instructions in accordance with company operating procedures
4. Relocate paver	4.1. Drive paver safely on highways and construction sites 4.2. Prepare paver for relocation according to manufacturer's specifications

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5. Carry out operator maintenance	5.1. Conduct inspection and fault finding in accordance with manufacturer's specifications and/or organisational requirements 5.2. Carry out routine operational servicing and lubrication tasks 5.3. Carry out minor maintenance 5.4. Constantly record performance of machine to enable timely repair of equipment
6. Clean up	6.1. Clear work area and recycle or dispose of ***materials*** in accordance with project environment management plan 6.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct paver operations:

- apply legislative, organisation and site requirements and procedures for conducting paver operations
- apply calculations of material requirements, mix, application rates, uniformity and travel speed
- change machine attachments
- select and use tools and equipment safely
- apply basic earthworks calculations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct paver operations:

- paver types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- paving operations and techniques
- site and equipment safety requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- safe operating techniques in all terrain
- civil construction activity sequences of road construction, earthworks and drainage
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting paver operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of paver operations • working with others to undertake and complete the paver operations in a way that meets all of the required outcomes • consistent timely completion of paver operations that safely, effectively and efficiently meets the required outcomes • a minimum of five sections of straight paving (at least one of 100 metres) plus three intersections are to be placed
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the paver operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity, Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Tools and equipment may include:	• hand tools and maintenance equipment relevant to the particular paver
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • lean-up management
Paver may include:	• self-propelled purpose designed crawler tractors • wheeled or combination machines for the purpose of laying and spreading the construction materials
Materials may include:	• granular materials • bound materials • concrete

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC309A Conduct stabiliser operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of stabiliser operations in the civil construction industry. It includes planning and preparing, conducting stabiliser pre-operations checks, operating stabilisers, relocating stabilisers, carrying out operator maintenance, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and apply relevant drawings and job specifications to all work activities 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Determine ***material*** to be laid and handling procedures to be employed 1.6. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability, and rectify or report any faults 1.7. ***Environmental protection requirements*** are identified from the project environmental management plan, confirmed and applied to the allotted task
2. Conduct stabiliser pre-operational checks	2.1. Carry out pre-start, start-up, park and shutdown procedures in accordance with manufacturers' and/or site specific requirements 2.2. Check ***stabiliser*** controls and functions for serviceability, focusing on brakes, implements or other attachments and manoeuvrability, and rectify or report any faults
3. Operate stabiliser	3.1. Identify site ***hazards*** associated with stabiliser operations and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for stabiliser to achieve optimum output in accordance with manufacturers' design specifications while achieving specified tolerances 3.3. Operate stabiliser in accordance with company operating procedures

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	3.4. ***Operate stabiliser*** to produce results, including mixing materials, using ***additives*** and line and length
4. Relocate stabiliser	4.1. Move stabiliser safely between worksites in accordance with relevant codes and traffic management requirements 4.2. Prepare stabiliser for relocation
5. Carry out operator maintenance	5.1. Conduct inspection and fault finding in accordance with manufacturers' specifications and/or organisational requirements 5.2. Carry out routine operational servicing and lubrication tasks 5.3. Carry out minor maintenance 5.4. Record performance of machine constantly to enable timely repair of equipment
6. Clean up	6.1. Clear work area and recycle or dispose of materials in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct stabiliser operations:

- apply legislative, organisation and site requirements and procedures for conducting stabiliser operations
- apply stabilising techniques, including pulverising, mixing, and the use of additives
- apply calculation of material requirements, mix, application rates, uniformity and travel speed
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct stabiliser operations:

- basic principles of soil technology for civil works
- stabiliser types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- site and equipment safety requirements
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- methods of changing machine attachments
- safe operating techniques in all terrain
- basic earthworks calculations
- civil construction activity sequences of road construction, earthworks and drainage
- levelling techniques
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of stabiliser operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of stabiliser operations • working with others to undertake and complete the conduct of stabiliser operations in a way that meets all of the required outcomes • consistent timely completion of stabiliser operations that safely, effectively and efficiently meets the required outcomes • the conduct of stabiliser operations performed on two separate projects and to include the mandatory tasks stated in the Range Statement and the stabilising of an area of at least 500m^2 ensuring moisture content, additive application rate, pulverising, mixing, line and length are in accordance with project specifications: this is to be performed utilising two different additive types • the conduct of authorised operator maintenance
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical

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	resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of stabiliser operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation

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Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • rural roads and highways • urban roads and highways
Materials may include:	• imported fill • aggregates • cement • lime • bitumen • other chemicals
Tools and equipment may include:	• hand tools and maintenance equipment relevant to the particular stabiliser
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Hazards may include:	• uneven/unstable terrain • trees • fires • overhead and underground services • bridges • buildings • excavations • traffic • embankments • cuttings • structures • hazardous materials
Operate stabiliser may include:	• churning up (excavating and remixing) existing fill • refilling in layers using the stabilised material • mixing materials • applying additives

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	• achieving specified line and depth • enhancing the properties of the existing pavement • decreasing permeability • volume change
Additives may include:	• cement • lime • bitumen • other chemicals where the existing material is not conducive to cement treatment

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC310A Construct and maintain roads

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction and maintenance of roads in the civil construction industry. It includes preparing for road construction and maintenance, constructing roads, and maintaining roads. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for road construction and maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and apply relevant drawings and job specifications to all work activities 1.3. Receive, interpret and clarify shift changeover details 1.4. Locate ancillary services and mark services out before work commences 1.5. Select tools and equipment to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.7. Conduct equipment pre-start checks to ensure equipment is ready for operation 1.8. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task 1.9. Communicate with other personnel using approved communication methods
2. Construct roads	2.1. Conform to specified road construction characteristics and location 2.2. Peg road detailing direction and shape 2.3. Prepare road sub-base so that road material can be applied to meet planned ***road characteristics*** 2.4. Construct road surface to achieve required traction, manoeuvrability and stable haul surface for all vehicles and personnel 2.5. Erect and construct ***road signage*** and safety barriers to avoid damage to equipment, avoid injury to personnel, protect surrounding vegetated areas and delineated roadways 2.6. Construct ***drains*** and water crossing points to aid the removal of run-off, avoid accumulation of excessive water, and

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	minimise road and environmental damage
3. Maintain roads	3.1. Assess road conditions regularly for compliance with road design characteristics 3.2. Maintain condition of roads in relation to volume of ***traffic*** and future requirements 3.3. Identify, repair and/or report damage to road to appropriate authorities 3.4. Maintain effective drainage for the removal of excess water and ensure safe operating surface 3.5. Monitor, redesign and remake areas subject to excessive wear and tear to meet design characteristics 3.6. Maintain the road surface utilising approved dust suppressants

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct and maintain roads:

- apply dumping techniques
- apply diagnostic techniques
- apply driving techniques
- apply hazardous goods handling techniques
- interpret plans, reports, maps, specifications
- apply lifting techniques (manual, cranes and loads)
- report defects
- apply safe work practices
- work in a team
- use communications equipment
- use hand and power tools
- organise work activities

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to construct and maintain roads:

- construction pegging
- drainage construction methods
- dumping procedures
- emergency procedures
- environmental and heritage procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data
- hauling procedures
- hazardous goods procedures and consequences of spills
- isolation procedures
- material placement procedures
- mine operational system
- night and day working procedures
- OHS procedures

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- open cut procedures
- operational procedures and checks
- road construction methods/road rules
- shutdown procedures
- site procedures
- site safety requirements
- start-up procedures
- towing procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for constructing and maintaining roads • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of road construction and maintenance • working with others to undertake and complete the construction and maintenance of roads in a way that meets all of the required outcomes • consistent timely completion of road construction and maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction and maintenance of roads

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including abandoned equipment, adjoining pit walls, adverse weather conditions (electrical storms, floods, fires), chemicals, contaminants,

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	equipment, fences, holes, materials, over-hanging rocks, personnel, pot holes, unsafe ground, unstable faces, vehicles • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Environmental issues may include:	• culturally-sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality
Road characteristics may include:	• berms • bunds • camber • curves • drainage • drainage • gradient • surface material • width
Road signage may include:	• danger warnings • safety warnings • speed
Drains may include:	• berm • flora coverage (grasses, small bushes) • netting • ponding • straw baling • t pieces
Traffic may include variations in:	• frequency • loadings • types of vehicles

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Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC311 Conduct concrete road paver operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of concrete road paver operations in the civil construction industry. It includes planning and preparing, setting up concrete road paver, operating concrete road paver, carrying out operator maintenance, relocating paver, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:
Civil construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not applicable.

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Elements and Performance Criteria

1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted ***task*** 1.3 Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4 Select ***plant, tools and equipment*** to carry out ***tasks*** consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5 Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task 1.6 Identify ***type of pavement*** required
2. Set up concrete road paver	2.1 Set up paver width and settings in accordance with job specification and plans 2.2 Use paving drawings and survey markings to establish work area 2.3 Conduct pre-start and maintenance checks within worksite and manufacturer's specifications
3. Operate concrete road paver	3.1 Make adjustments to sensors and controls while paving 3.2 Use **communication systems** and hand signals within workplace specifications 3.2 Operate paver within machinery guidelines and job specifications 3.3 Complete shut-down and park-up procedures as per machine and site instructions 3.4 Complete required documentation and report concerns to appropriate personnel
4. Clean up	4.1 Conduct wash down procedures within worksite and manufacturer's specifications 4.2 Clean up work area and dispose of or recycle materials in accordance with the project environment management plan 4.3 Clean, check, maintain and store plant and tools

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Required Skills and Knowledge

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Required skills
Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct concrete road paver operations: • apply legislative, organisation and site requirements and procedures for conducting road construction paver screeding operations • organise work activities • select and use relevant tools and equipment safely • identify and report on hazards related to the worksite and work activity and report defects in machinery and tools • communicate effectively to receive and clarify work instructions • numeracy skills for planning and operations
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct concrete road paver operations: • site and equipment safety requirements • site communication and hand signals • paver screed operations • approaches to basic concreting • longitudinal and transverse joints • equipment types, characteristics, technical capabilities and limitations • operational, maintenance and basic diagnostic procedures • site isolation and traffic control responsibilities and authorities • processes for the calculation of material uniformity and travel speed • materials safety data sheets and materials handling methods • quality requirements • civil construction terminology • safe operating techniques in all terrain • JSAs/safe work method statements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

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Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting concrete road paver operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of concrete road paver operations • working with others to undertake and complete concrete road paver operations that meets all of the required outcomes • consistent timely completion of concrete road paver operations that safely, effectively and efficiently meets the required outcomes • the conduct of paver operations are to be performed in a minimum of two different concrete types/surface types and are to include the mandatory tasks from the unit scope and cover as a minimum: • three longitudinal joints (of at least 100m) to be constructed to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions • five occasions of straight paving (one of at least 100 linear metres) to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions • one intersection to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions • operations to include residential, commercial and highway projects • material delivery through the paver is to include manual and automatic control • prestart operations on the machine • pave off the stop end and pave on the form stop end • maintain edges both with and without boards • use and changes made to vibrators

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	• end-of-day wash-up and washing down of the machine • correct use of the safety systems • demonstrate knowledge of plough and auger systems • monitoring of concrete height in boxes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes

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	• consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete concrete road paver operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, visibility is maintained and blind spots are avoided, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • safety supports are certified and within manufacturer's recommendations • recognising hazards and risks including

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	uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
Site may include:	• formed/prepared roads • barriers • parapets • airport runways • factory floors • reinforced foundations • pads • highways • freeways • car parks • container yards • hard stands • footpaths and bikeways
Task may include:	• formation within recommended lateral tilt values • mixing and spreading granular materials • spreading concrete materials • mixing and spreading stabilised materials
Traffic may include:	• high speed freeways and highways • rail corridors • commercial estates • egress and ingress locations • congested urban environments • low traffic rural areas • off-road un-trafficked areas • parking sites • pedestrian areas
Plant, tools and equipment may include:	• shovels • safety supports • material placing equipment • agitator tools • tippers and dump trucks • measuring tapes • depth gauges • standard tool kits

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	• string lines • thermometers • straight edges • operator manuals • communication equipment • GPS systems
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management • spill kit • fuels, oils, hydraulic fluids
Types of pavement may include:	• no – fines • kerb – gutter • base • sub-base • type F barrier • shoulder • continuous reinforced concrete pavement
Communication systems may include:	• two-way radios • mobile phones • hand signals • traffic control signals • fixed warning signs

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Custom Content Section

Not applicable.

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RIICRC312 Setup and maintain concrete paver stringlines

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of setting-up and maintaining concrete paver stringlines in the civil construction industry. It includes planning and preparing, inspecting equipment and layout, placing stringlines and pins, installation and removal of access gates and the storage and maintenance of stringlines. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:
- Civil Construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills

Elements and Performance Criteria Pre-Content

Not applicable.

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Elements and Performance Criteria

1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted ***task*** 1.3 Identify, obtain and implement signage requirements from the project ***traffic*** management plan 1.4 Select ***plant, tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5 Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Inspect equipment and layout	2.1 Conduct visual inspection of stringlines to ensure compliance with workplace specifications 2.2 Conduct inspection of stringline flags and pins and ensure compliance with worksite plans 2.3 Inspect hand or car winch and other **pulling devices** for safe and accurate operation 2.4 Conduct visual inspection of ground conditions for conformance to work requirements 2.5 Load and unload stringline pins onto vehicle within workplace specifications 2.6 Set up barricades and exclusion zones around work area/PTE
3. Conduct placement of stringline and pins	3.1 Drive in stringline pins and placement of pins within workplace specifications 3.2 Tension stringlines within workplace specifications 3.3 Use **tension measuring devices** to establish accurate tensions on stringlines 3.4 Set up anchor pins within workplace specifications 3.5 Communicate with work teams using **workplace hand or radio communication procedures** 3.6 Tie off stringline to anchor pins 3.7 Release stringline from anchor pins 3.8 Set out from survey pins heights/level and undertake visual verification of alignment

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	3.9 Reset stringline to specification after it breaks
4. Install and remove access gates	4.1 Release stringline from the flags and fix on ground to allow vehicles to cross 4.2 Install and remove **protective devices** for crossing vehicles where required 4.3 Verify stringline vertical and horizontal upon resetting via measurement and visual inspection
5. Store and maintain pins and stringline	5.1 Check and maintain clamps, nuts and drive pins 5.2 Clean, check, maintain and store stringline to protect it from damage

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct concrete road paver operations: • coordinating with other team members • following instructions • reading drawings and specifications • reporting faults and hazards • knowing work responsibilities and team member's responsibilities
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct concrete road paver operations: • levelling techniques • characteristics of clear and appropriate hand signals • services identification

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• plans/drawings • type of stringline and tension capabilities • techniques on driving in stringline pins/placement of pins within workplace specifications • techniques on tensioning stringline • using a tension metre and different types of tension metres • reporting of faults and hazard identification • workplace equipment safety • working around other workgroups • pre-start SWMS and measurements and calculations • read survey pins

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Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting concrete paver stringlines • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of concrete paver stringlines • working with others to undertake and complete the concrete paver stringlines operations in a way that meets all of the required outcomes • consistent timely completion of concrete paver stringline operations that safely, effectively and efficiently meets the required outcomes • conduct concrete paver stringlines operations by: • install and rectify on a minimum of 2 occasions, 2 access points • install pins to correct height and horizontal adjustment for a minimum distance of 500 metres • install step-up flags • tension string lines to specifications • conduct measurement checks • conduct visual inspections and checks • place at least one crossover • demonstrate the removal and storage of a string line.
Context of and specific resources for	• This unit must be assessed in the context of the work environment. Where personal safety or

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assessment	environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in Civil Construction. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the setting up, monitoring and maintaining concrete paver stringlines
Guidance information for assessment	• Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
Site may include:	• formed/prepared roads • pads • highways

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	• freeways • airport runways • tunnels • rail corridors • housing estates • car parks • container yards • hard stands • footpaths and bikeways • traffic
Task may include:	• access and egress vehicle areas • installing pins, stringlines, tension wire lines • levelling stringlines
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • parking sites • pedestrian areas
Plants, tools and equipment may include:	• shovels • hammers • PPE • tensioning devices • measuring tapes • depth gauges • standard tool kits • string lines • pins/stakes • survey equipment • communication equipment
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

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Custom Content Section

Not applicable.

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RIICRC313 Conduct concrete road curing and texturing operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of concrete road curing and texturing operations in the civil construction industry. It includes planning and preparing, setting up and maintaining texture curing and shut down and clean-up operations. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:
Civil construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not applicable.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted ***task*** 1.3 Identify, obtain and implement signage requirements from the project ***traffic*** management plan 1.4 Select ***plant, tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5 Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Setup and maintain the texture and curer machine	2.1 Set up paver width and settings in accordance with job specification and plans 2.2 Use paving drawings and survey markings to establish work area 2.3 Conduct pre-operational checks including prestart checks according to manufacturer's instructions 2.4 Check filters and sprays for correct operation 2.5 Adjust stringline sensors within workplace specifications
3. Operate the texture and curer machine	3.1 Check for hazards around the texture curing machine 3.2 Make adjustments to sensors and controls while paving 3.3 Use **communication systems** and hand signals within workplace specifications 3.4 Check spray rates for correct operation 3.5 Check texture rake configuration for correct settings
4. Shut down and clean up	4.1 Secure machine with appropriate safety supports 4.2 Check and clean filters and nozzles according to worksite procedures and manufacturers specifications

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ELEMENT	PERFORMANCE CRITERIA
	4.3 Clean work area and dispose of, or recycle, materials in accordance with the project environmental management plan 4.4 Clean, check, maintain and store plant and tools 4.5 Safely park machine

Required Skills and Knowledge

Required skills
Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct concrete road curing and texturing operations: • apply legislative, organisation and site requirements and procedures for conducting road construction paver screeding operations • apply legislative, organisation and site requirements and procedures for laying pavers • organise work activities • select and use relevant tools and equipment safely • identify and report on hazards related to the worksite and work activity • communicate effectively to receive and clarify work instructions • organise work activities • use and operate equipment safely • identify and report hazards related to work activity
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct concrete road curing and texturing operations: • site and equipment safety requirements • equipment types, characteristics, technical capabilities and limitations • operational, maintenance and basic diagnostic procedures • site isolation and traffic control responsibilities and authorities • processes for the calculation of material uniformity and travel speed • materials safety data sheets and materials handling methods • quality requirements • civil construction terminology • safe operating techniques in all terrain

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• JSAs/safe work method statement • quality requirements • texture curing machine operations and functions • safety requirements • environmental requirements • job specific specifications • JSA SWMS

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting concrete road curing and texturing • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of concrete road curing and texturing • working with others to undertake and complete the concrete road curing and texturing operations in a way that meets all of the required outcomes • consistent timely completion of concrete road curing and texturing operations that safely, effectively and efficiently meets the required outcomes • conduct road curing and texturing operations to ensure: • correct calculation and application of road curing compound • correct application of texture type according to specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or

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EVIDENCE GUIDE	
	environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in Civil Construction. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the conduct of concrete road curing and texturing operations .
Guidance information for assessment	Consult the SkillsDMC User Guide for further

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EVIDENCE GUIDE	
	information on assessment including access and equity issues.

Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational first aid

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	requirements and evacuation
Site may include:	• formed/prepared roads • pads • highways • freeways • car parks • container yards • hard stands • footpaths and bikeways
Task may include:	• application of curing compounds • texturing of surface concrete
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, tools and equipment may include:	• hand spray equipment • hand rakes and brooms • measuring tapes • depth gauges • standard tool kits • string lines • thermometers • straight edges
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Custom Content Section

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Not applicable.

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RIICRC314 Handle concrete materials

Modification History

Not applicable.

Unit Descriptor

This unit of covers handling of concrete materials. It includes requirements to safely manually handle, store and apply environmental management principles associated with concreting materials and components in preparation for commencement of concreting work. The unit includes the identification and safe handling of hazardous materials and waste in accordance with material safety data sheets (MSDS)

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:
- Civil construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted ***task*** 1.3 Identify, obtain and implement signage requirements from the project ***traffic*** management plan 1.4 Select ***plant, tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5 Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Handle and sort concrete materials and components	2.1 Identify and check on-site delivery of ***concrete materials and components*** for conformity to material schedule, plans and specifications. 2.2 Move concrete materials to specified location applying safe manual ***handling procedures*** 2.3 Stack and stockpile concrete materials and components for ease of identification and retrieve for task sequence and job location in accordance with job specifications 2.4 Protect concrete materials and components against physical and water damage, and store clear of access ways, for ease of identification, retrieval and distributio 2.5 Handle and position components ready for installation in accordance with manufacturer recommendations, plans and specifications
3. Handle and remove concrete materials and components on	3.1 Handle materials safely according to MSDS and requirements of regulatory authorities

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completion	3.2 Identify hazardous material for separate handling 3.3 Use dust suppression procedures to minimise health risk to work personnel and others 3.4 Provide protection of materials in accordance with specific material needs 3.5 Store materials safely and effectively according to MSDS and requirements of ***statutory and regulatory authorities***
4. Clean up	4.1 Clear work area and dispose of, reuse or recycle material in accordance with legislation, regulations, codes of practice and job specification 4.2 Identify hazardous material for separate handling 4.3 Remove non-toxic materials using correct procedures 4.4 Use dust suppression procedures to minimise health risk to work personnel and others 4.5 Clean, check, maintain and store tools and equipment in accordance with manufacturer recommendations and standard work practices

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Required Skills and Knowledge

Required skills
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct concrete handling including: • communication skills to: • determine requirements • enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand • follow instructions • read and interpret: • documentation from a variety of sources • drawings and specifications • report faults • use language and concepts appropriate to cultural differences • use and interpret non-verbal communication, such as hand signals • evaluating own actions and making judgments about performance and necessary improvements • identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials • organisational skills, including the ability to plan and set out work • recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems • teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities • technological skills to: • use a range of mobile technology, such as two-way radio and mobile phones • voice and hand signals to access and understand site-specific instructions.
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to handle concrete including: • concrete materials handling techniques • concreting materials • general construction terminology • hazardous materials • job safety analysis (JSA) and safe work method statements • MSDS • materials storage and environmentally friendly waste management

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• plans, drawings and specifications • processes for the calculation of material requirements • quality requirements • types, characteristics, uses and limitations of tools and equipment • workplace and equipment safety requirements.

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Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for handling concrete materials • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of handling concrete materials • working with others to undertake and complete handling concrete material operations in a way that meets all of the required outcomes • consistent timely completion of handling concrete material operations that safely, effectively and efficiently meets the required outcomes • conduct handling concrete materials
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in Civil Construction. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the handling of concrete materials
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to handling concreting materials • relevant Australian standards

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	• safe work procedures relating to handling concreting materials • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.
Safety (OHS) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances, including cement and curing agents • organisational first aid • PPE prescribed under legislation, regulations and workplace policies and practices • safe operating procedures, including the conduct of operational risk assessment and treatments associated with: • earth leakage boxes • lighting • power cables, including overhead service trays, cables and conduits • restricted access barriers • surrounding structures • traffic control • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety
Tools and equipment include:	• brooms • rakes

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	• shovels • tarpaulins and covers • wheelbarrows
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures
Materials:	• include: • aggregates • cement • form release agents • non-toxic materials, including general concreting materials • sand • water • may include: • additives • curing compound • oxides
Environmental requirements includes:	• clean-up management • dust and noise • dust suppression, including: • covering • keeping dust in the air to a minimum • spraying with water • using a vacuum cleaner • stormwater management • vibration • waste management
Concrete materials and components:	• include: • bar chairs • bracing • plastic membrane • reinforcement mesh • spacers • steel and timber formwork • may include: • bar steel • decking • key joints • push-pull props

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	• reinforcement bars • scaffolding • support props • tilt panels.
Handling procedures include:	• calculation of quantities • manual handling, including: • carrying materials using correct lifting techniques • control of waste • using pallets • MSDS • protection of materials • stacking and storing of materials
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice

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Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Custom Content Section

Not applicable.

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RIICRC315 Use concreting materials and equipment

Modification History

Not applicable.

Unit Descriptor

This unit of competency covers planning, preparing, selecting, using and cleaning up concreting tools, plant and equipment. The unit includes hand tools, power tools, small plant and equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in entry level operational roles, at worksites within: Civil Construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

Not applicable.

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Elements and Performance Criteria

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted ***task*** 1.3 Identify, obtain and implement **signage** requirements from the project ***traffic*** management plan 1.4 Select ***plant, tools and equipment*** to carry out **tasks** consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5 Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task 1.6 Identify ***type of pavement*** required
2. Identify and select hand and power tools	2.1 Identify and select ***hand and power tools***, according to their functions, operations and limitations. 2.2 Recognise and adhere to OHS requirements for using hand and power tools 2.3 Check lubricants, hydraulic fluid and water according to manufacturer recommendations 2.4 Select tools consistent with job requirements 2.5 Check tools, including leads and hoses, for tags, serviceability and safety, and report any faults 2.6 Check and maintain power tool guards, retaining bolts, couplings, gauges and controls in accordance with manufacturer recommendations 2.7 Select equipment to hold or support material during operation
3. Use tools	3.1 Use hand tools appropriate to the task and materials, and in accordance with OHS requirements 3.2 Use power tools safely and effectively and in accordance with manufacturer recommendations and state or territory OHS requirements

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	3.3 Sharpen and maintain tools
4. Identify, select and use plant and equipment	4.1 Check ***plant and equipment*** for safety and report faults 4.2 Select and use plant and equipment consistent with OHS requirements, manufacturer specifications and the needs of the job 4.3 Check lubricants, hydraulic fluid and water according to manufacturer's specifications 4.4 Maintain plant and equipment in accordance with manufacturer specifications and standard work practices
5. Clean up	5.1 Clear the work area and dispose of, reuse or recycle material in accordance with legislation, regulations, codes of practice and job specification 5.2 Clean, check, maintain and store plant, tools and equipment in accordance with manufacturer recommendations and standard work practices

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Required Skills and Knowledge

Required skills
Required skills for this unit are: • communication skills to: • determine requirements • enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand • follow instructions • read and interpret: • documentation from a variety of sources • drawings and specifications • report faults • use language and concepts appropriate to cultural differences • use and interpret non-verbal communication, such as hand signals • evaluating own actions and making judgments about performance and necessary improvements • identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials • organisational skills, including the ability to plan and set out work • recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems

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• teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities • technological skills to: • use a range of mobile technology, such as two-way radio and mobile phones • voice and hand signals to access and understand site-specific instructions.
Required knowledge
Required knowledge for this unit is: • concreting materials • concreting tool use techniques • general construction terminology • job safety analysis (JSA) and safe work method statements • material safety data sheets (MSDS) • materials storage and environmentally friendly waste management • plans, drawings and specifications • processes for the calculation of material requirements • quality requirements • relevant Acts, regulations and codes of practice • tools and equipment safety manuals and instructions • types, characteristics, uses and limitations of plant, tools and equipment • workplace and equipment safety requirements.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting concrete road curing and texturing • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of concrete road curing and texturing • working with others to undertake and complete the

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	concrete road curing and texturing operations in a way that meets all of the required outcomes • consistent timely completion of concrete road curing and texturing operations that safely, effectively and efficiently meets the required outcomes • conduct road curing and texturing operations to ensure: • correct calculation and application of road curing compound • correct application of texture type according to specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in Civil Construction. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge

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	• observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the conduct of concrete road curing and texturing operations .
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to using concreting tools and equipment • relevant Australian standards • safe work procedures relating to using concreting tools and equipment • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.
Safety (OHS) is to be in accordance with state and territory legislation and regulations and project safety	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of

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plan and may include:	others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances • organisational first aid • PPE prescribed under legislation, regulations and workplace policies and practices • safe operating procedures, including the conduct of operational risk assessment and treatments associated with: • earth leakage boxes • lighting • power cables, including overhead service trays, cables and conduits • restricted access barriers • surrounding structures • traffic control • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• bolt cutters • crow bars • cutting knives • edging tools • floats • grinders • hammers • jointers • kneel boards • levelling equipment • long handled shovels • measuring tapes • nail bags • picks • pinch bars • pliers • rakes

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	• screeds • sledge hammers • steel fixing reels • string lines • trowels • vibrators.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management.
Hand and power tools include:	• digging, transporting, levering, cutting, shaping, fixing, fastening and percussion tools • electrically operated portable and static power tools and leads • material shifting, holding tools and finishing tools • setting out, marking out and levelling tools • 240 volt electricity (circular saw, mitre saw, drill, grinder, impact hammer) • pneumatic (wrench, grinder, jackhammer, screwdriver) • battery driven (drill, grinder, circular saw, sander, impact hammer) and • hydraulics (portapower and attachments, jacking equipment, shoring systems
Plant and equipment include:	• compressors • generators.

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Custom Content Section

Not applicable.

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RIICRC316 Place and compact concrete

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of concrete placing and compacting operations in the civil construction industry. It includes planning, preparing, defining the work area, placing, compacting, screeding, levelling and clean up during concreting operations. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:
Civil construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

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Employability Skills Information

This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted ***task*** 1.3 Identify, obtain and implement signage requirements from the project ***traffic*** management plan 1.4 Select ***plant, tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5 Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Define and prepare work area	2.1 Check location of concrete placement is determined from plans and specifications and location for placement is free of debris and waste 2.2 Maintain safe working area around pour location using barriers and signage consistent with OHS regulations 2.3 Locate plant, tools and equipment to suit planned placement 2.4 Undertake pre-pour inspections before concrete arrives on site
3. Place concrete and compact	3.1 Place ***concrete*** in horizontal layers into location to levels indicated by markers, level pegs or lines 3.2 Minimise height of vertical drop of concrete to ***avoid***

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	segregation of concrete materials 3.3 Consolidate poured concrete during process using approved ***compaction or vibration method*** 3.4 Check ***finished*** levels against datum using levelling device
4. Screed/level concrete	4.1 ***Screed*** concrete to correct levels and grades using straight edged tool/formwork mounted screed
5. Clean up	5.1 Clear work area and dispose, reuse or recycle materials in accordance with legislation, regulations, codes of practice and job specification 5.2 Clean, check, maintain and store plant, tools and equipment in accordance with manufacturer recommendations and standard work practices

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Required Skills and Knowledge

Required skills
Specific skill is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct placement and compaction of concrete including: • using a vibrator • co-ordinating with other team members • following instructions • reading drawings and specifications • reporting faults and hazards • knowing responsibilities and team members' responsibilities
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct placement and compacting concrete including: • cold joints • compaction • concrete materials • concrete reinforcement techniques • concreting techniques • general construction terminology • job safety analysis (JSA) and safe work method statements • levelling techniques • material safety data sheets (MSDS) • materials storage and environmentally friendly waste management • mix specifications • plans, drawings and specifications • processes for the calculation of material requirements • quality requirements • segregation • slump testing • types, characteristics, uses and limitations of plant, tools and equipment • workplace and equipment safety requirements. • MSDS / SWMS • testing procedures • spec • environmental hazards/constraints

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- how to read a delivery docket
- different methods of placing concrete ie kibble, pump agitator tipper
- hazards involved in the placement of concrete ie enviro, plant movements, chemicals
- knowing what type of concrete is to be used and what specification
- the importance of doing pre-pour checks before concrete arrives onsite (formwork, steel etc)
- the effects the weather has on concrete ie cold, hot, rain
- the importance of planning your vehicle movements in and around your concrete pour

- different styles and methods of vibrating concrete
- the difference between harmonious concrete and non-harmonious concrete
- how concrete compaction effects the strength and life span of concrete
- what to look for when vibrating concrete

- knowing the environmental and waste management procedures
- inspection of tools and equipment at the end of the shift, why it is important to clean tools
- different products and ways of cleaning tools
- storage and maintenance of concrete tools and gear

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Evidence Guide

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the placement and compaction of concrete • implementation of requirements, procedures and techniques for the safe, effective and efficient placement and compaction of concrete • working with others to undertake the placement and compaction of concrete that meets all of the required outcomes • consistent timely placement and compaction of concrete that safely, effectively and efficiently meets the required outcomes • conduct placement and compaction of concrete materials

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Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in Civil Construction. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the placing and compacting of concrete
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity

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	issues.

Range Statement

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The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to placing concrete • relevant Australian standards • safe work procedures relating to placing concrete • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection
Safety (OHS) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances • organisational first aid • PPE prescribed under legislation, regulations and

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	workplace policies and practices • safe operating procedures, including the conduct of operational risk assessment and treatments associated with: • earth leakage boxes • lighting • power cables, including overhead service trays, cables and conduits • restricted access barriers • surrounding structures • traffic control • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of fire fighting equipment • use of tools and equipment • work place environmental requirements and safety
Tools and equipment :	• include: • chutes • measuring tapes and rules • screed boards • shovels • trowels • may include: • brooms • compressors • concrete placing booms • kibbles • line pumps • mechanised dumpers • rakes • stipple devices • trowelling machines • vibrators • wheelbarrows
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications where specified • relevant regulations, including Australian standards • workplace operations and procedures

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Materials include:	• concrete.
Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management
Concrete delivery includes:	• crane and kibble • pre-mix truck • wheelbarrow
Placing of concrete includes:	• kibble • pumping equipment • shovelling • tremmies • truck placed • vibrating • wheelbarrows
Methods to ***avoid segregation of concrete*** include:	• using a tremmie, through minimising the height of a vertical drop (no greater than 2 metres high for 20MPA at 80 slump) • using pumps with a flexible hose.
Compaction or vibration methods include:	• mechanical vibrators
Finishing techniques include:	• broom finished • brushed • mechanical trowelling machine • steel trowel • wood float
Screed :	• includes a hand screed • may include: • a mechanical vibrating screed • magic screeds

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Custom Content Section

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Not applicable.

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RIICRC317 Finish concrete pavements

Modification History

Not applicable.

Unit Descriptor

This unit covers finishing concrete pavements that have been placed and screeded in domestic, commercial and civil applications and to provide a finish for designated requirements.
The unit includes the conduct of manual and mechanical finishing. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in entry level operational roles, at worksites within: Civil Construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted ***task*** 1.3 Identify, obtain and implement **signage** requirements from the project ***traffic*** management plan 1.4 Select ***plant, tools and equipment*** to carry out **tasks** consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5 Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task 1.6 Identify ***type of pavement*** required
2. Finish concrete	2.1 Apply float and trowel after initial screeding to assist in maintaining a ***level surface*** and to remove screeding inaccuracies 2.2 Apply mechanical trowelling to consolidate and densify the setting concrete surface 2.3 Install ***control joints***, edges finished and concrete trowelled to specifications 2.4 Apply texture according to client requirements 2.5 Apply final trowel/ ***finish*** to concrete surface to specifications
3. Clean up	3.1 Clear work area and dispose of, reuse or recycle material in accordance with legislation, regulations, codes of practice and job

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	specification 3.2 Clean, check, maintain and store plant, tools and equipment in accordance with manufacturer recommendations and standard work practices

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Required Skills and Knowledge

Required skills
Specific skill is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct finished concrete pavement operations including: • communication skills to: • determine requirements • enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand • follow instructions • read and interpret: • documentation from a variety of sources • drawings and specifications • report faults • use language and concepts appropriate to cultural differences • use and interpret non-verbal communication, such as hand signals • evaluating own actions and making judgments about performance and necessary improvements • identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials • organisational skills, including the ability to plan and set out work • recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems • teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities • technological skills to: • use a range of mobile technology, such as two-way radio and mobile phones • voice and hand signals to access and understand site-specific instructions
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes

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knowledge of the following, as required to conduct finish concrete pavement operations: • concrete finishing techniques • concrete materials • concrete placement • curing times • general construction terminology • job safety analysis (JSA) and safe work method statements • levelling techniques • material safety data sheets (MSDS) • materials storage and environmentally friendly waste management • plans, drawings and specifications • processes for the calculation of material requirements • quality requirements • types, characteristics, uses and limitations of plant, tools and equipment • workplace and equipment safety requirements

Evidence Guide

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the finishing of concrete pavements • implementation of requirements, procedures and techniques for the safe, effective and efficient finishing of pavements • working with others to undertake the finishing of concrete that meets all of the required outcomes • consistent timely finishing of concrete that safely, effectively and efficiently meets the required outcomes • conduct finishing of concrete on: • 4x10 metre slab or equivalent

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	• demonstrate the use of: • wood float • vibration screed • power screed • steel trowel • edging tool • demonstrate the removal; for form work over 10 metres
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian Standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Integrated Framework Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application

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	• reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues

Range Statement

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to

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	finishing concrete • relevant Australian standards • safe work procedures relating to finishing concrete • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection
Safety (OHS) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances • organisational first aid • PPE prescribed under legislation, regulations and workplace policies and practices • safe operating procedures, including the conduct of operational risk assessment and treatments associated with: • earth leakage boxes • lighting • power cables, including overhead service trays, cables and conduits • restricted access barriers • surrounding structures • traffic control • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety
Tools and equipment:	• include: • bull floats

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	• magnesium trowels • power trowels • steel trowels • wooden floats • may include: • brooms • channel trowels • edging tools • hoses • kerb • step readers • stipple plates
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications where specified • relevant regulations, including Australian standards • workplace operations and procedures
Materials include:	• concrete • water • oxides • retarders • aliphatic alcohols
Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management
Level surfaces include:	• a concrete surface that has been placed and screeded to the reduced level (RL) in accordance with drawings and specifications including: • bridge paving • road paving • hardstands • footpaths
Assistance in maintaining a ***level surface*** includes:	• assessing the curing process to allow manual and mechanical trowelling to be applied
Control joints:	• are included in the concrete surface to control cracking
Finishing techniques include:	• broom finished • brushed • bull float

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	• hand float (wooden, magnesium or composition) • mechanical trowelling machine • slip resistance • spraying and brushing to expose aggregate • steel trowel • to engineer's drawings and specifications • wood float • using and removing pipe pins • reworking formwork • green cutting
Edge ***finishing*** types include:	• fine • rounded • straight edge

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Custom Content Section

Not applicable.

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RIICRC318 Cure Concrete

Modification History

Not applicable.

Unit Descriptor

This unit of competency specifies the outcomes required to carry out the initial curing process to a nominated poured concrete section to control the moisture evaporation from finished concrete.
The unit includes using curing agents and curing techniques in accordance with engineering specifications. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:
Civil construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

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Employability Skills Information

This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted ***task*** 1.3 Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4 Select ***plant, tools and equipment*** to carry out **tasks** consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5 Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task 1.6 Identify ***type of pavement*** required
2. Cure concrete	2.1 ***Cure concrete*** to project specifications 2.2 Install and maintain ***run-off devices*** 2.3 Apply and maintain ***curing compound*** and ***curing technique/method*** on concrete surface to project specifications 2.4 Isolate and/or barricade the area to ***protect concrete*** during curing process
3. Clean up	3.1 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification

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	3.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices

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Required Skills and Knowledge

Required skills
Required skills for this unit are: • communication skills to: • determine requirements • enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand • follow instructions • read and interpret: • documentation from a variety of sources • drawings and specifications • report faults • use language and concepts appropriate to cultural differences • use and interpret non-verbal communication, such as hand signals • evaluating own actions and making judgments about performance and necessary improvements • identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials • organisational skills, including the ability to plan and set out work • numeracy skills for planning and operations • recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems • teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities • technological skills to: • use a range of mobile technology, such as two-way radio and mobile phones • voice and hand signals to access and understand site-specific instructions.
Required knowledge
Required knowledge for this unit is: • concrete curing materials and techniques • curing duration and effect on ultimate strength • general construction terminology • job safety analysis (JSA) and safe work method statements

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- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- tools and equipment types, characteristics, uses and limitations
- workplace and equipment safety requirements.

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Evidence Guide

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting concrete curing • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of concrete curing • working with others to undertake and complete the concrete curing operations in a way that meets all of the required outcomes • consistent timely completion of concrete curing operations that safely, effectively and efficiently meets the required outcomes • conduct concrete curing operations
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets

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	• research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: working with others to undertake and complete concrete road paver operations
Guidance information for assessment	

Range Statement

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to curing concrete • relevant Australian standards • safe work procedures relating to curing concrete • signage • verbal, written and graphical instructions

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	• work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection
Safety (OHS) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances • organisational first aid • PPE prescribed under legislation, regulations and workplace policies and practices • safe operating procedures, including the conduct of operational risk assessment and treatments associated with: • earth leakage boxes • lighting • power cables, including overhead service trays, cables and conduits • restricted access barriers • surrounding structures • traffic control • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety
Tools and equipment include:	• hoses and sprinklers • rollers • spray applicators • tarpaulins and covers
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications where specified

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	• relevant regulations, including Australian standards • workplace operations and procedures
Materials include:	• curing compounds • plastic film • steam • water.
Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management.
Types of pavement	• **no – fines** • kerb – gutter • base • subbase • type F barrier • shoulder • continuous road concrete pavements
Cure concrete includes:	• controlling moisture evaporation from finished concrete to minimise shrinkage, add to final strength and control cracking through curing process • retaining free mixing water within the concrete to ensure ongoing cement hydration to assist in minimising dry shrinkage and to improve properties, such as potential compressive strength.
Run-off devices include:	• preventative barriers to restrict curing agents from affecting environmental areas.
Curing compounds include:	• chlorinated compounds • hydrocarbon compounds • polyvinyl alcohol (PVA) compounds • silicate compounds • solvent-based acrylic compounds • water • water-based acrylic compounds • wax-based compounds.
Curing techniques/methods include:	• curing compounds • fogging • hessian overlays • hosing • impervious plastic membranes • misting • ponding

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	• sprinklers • steam.
Protect concrete includes:	• using plastic membrane.

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Custom Content Section

Not applicable.

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RIICRC319 Saw and cut concrete pavements to initiate planned cracks

Modification History

Not applicable.

Unit Descriptor

This unit covers the cutting of concrete to initiate planned cracks in road pavement operations in the civil construction industry. It includes the conduct of planning and preparing, selecting and operating a concrete saw and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:
Civil construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the use of hand and power tools 1.2 Obtain, confirm and apply ***work instructions*** for the allotted task 1.3 Obtain, confirm and apply ***safety requirements*** from the site safety plan and organisational policies and procedures relevant to the allotted task 1.4 Identify, confirm and apply ***environmental protection requirements*** for the allotted task from the project environmental management plan 1.5 Mark out saw-cuts in accordance with specifications
2. Select and operate concrete saw	2.1 Select ***concrete saw*** consistent with needs of job and in accordance with standard work practice, and report any faults 2.2 Check ***equipment*** for serviceability and safety, and report faults 2.3 Clear route of hazards for safe placement of hoses 2.4 Assess concrete for optimum timing of saw-cut 2.5 Connect hoses to tool and cover trip hazards 2.6 Use concrete saw safely and effectively in application processes 2.7 Locate concrete saw safely when not in use 2.8 Saw and cut to correct dimensions as specified 2.9 Clean out and protect open cut 2.10 Complete saw cutting records
3. Clean up	3.1 Clear work area and dispose of or recycle materials in accordance with project environmental management plan 3.2 Clean, check, maintain and store machinery, tools and equipment in accordance with manufacturer's recommendations and

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	standard work practices

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to use hand and power tools: • apply legislative, organisation and site requirements and procedures • speak clearly and directly, listening carefully to instructions and information • interpret and understand the information required for the preparation and application of concrete saws, including work instructions, quality assurance procedures, manufacturer's instructions, materials safety data sheets and equipment • apply teamwork to a range of situations, particularly in a safety context • solve problems particularly in teams and in dealing practically with safety issues • show initiative in adapting to changing work conditions or contexts particularly when working across a variety of work placements • manage time, particularly in organising priorities and planning work including the scheduling and use of equipment, materials and tools to avoid back tracking and re work • take responsibility for self organisation of work priorities
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to use hand and power tools: • site and equipment safety requirements • concrete saws and their application • portable power tools and their application • power sources • equipment types, characteristics, technical capabilities and limitations • operational, maintenance and basic diagnostic procedures • materials safety data sheets (MSDS) and materials handling methods • project quality requirements • industry and worksite terminology • understanding of concrete setting process to determine optimum setting time, and minimise unplanned cracks • electrical and compressed air safety • JSA's/safe work method statement

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Evidence Guide

Critical aspects for assessment and evidence required to demonstrate	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy

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competency in this unit	all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the use of concrete saws on pavements • implementation of requirements, procedures and techniques for the safe, effective and efficient use of cutting and sawing concrete pavements • consistent timely use of concrete saws to safely, effectively and efficiently meets the required outcomes • conduct sawing on concrete pavements to a minimum of 100 linear metres
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the

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	following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake the use of concrete saws to initiate planned cracks
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may include:	• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, materials safety data sheets (MSDS) and diagrams or sketches • plans and specifications • quality requirements, including: dimensions and tolerances, standards of work and material standards • safe work procedures or equivalent related to using hand and power tools
Safety requirements may include:	• protective clothing and equipment • use of tools and equipment • workplace environment and safety • handling of materials • hazard control • hazardous materials and substances

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	• emergency procedures related to equipment operation which may include • emergency shutdown and stopping • extinguishing equipment fires • organisational first aid requirements and • evacuation
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and • clean-up management
Checking tools is to include:	• checking of electrical safety/inspection tag for currency • equipment defect identification • assessment of conditions and hazards and determination of work requirements
Power tools may include those powered by but not limited to:	• 240 volt electricity (circular saw, mitre saw, drill, grinder, impact hammer) • pneumatic (wrench, grinder, jackhammer, screwdriver) • battery driven (drill, grinder, circular saw, sander, impact hammer) and • hydraulics (portapower and attachments, jacking equipment, shoring systems)
Concrete saws are to include:	• wet cut • cut off saws • early dry cut
Equipment is to include:	• air hoses • generator • electric leads

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Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Custom Content Section

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Not applicable.

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RIICRC320 Seal concrete pavements

Modification History

Not applicable.

Unit Descriptor

This unit covers the sealing of concrete pavements in the civil construction industry. It includes planning and preparing and completing concrete sealing operations on pavements. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:
Civil construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

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Employability Skills Information

This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the use of hand and power tools 1.2 Obtain, confirm and apply ***work instructions*** for the allotted task 1.3 Obtain, confirm and apply ***safety requirements*** from the site safety plan and organisational policies and procedures relevant to the allotted task 1.4 Identify, confirm and apply ***environmental protection requirements*** for the allotted task from the project environmental management plan
2. Select and use hand tools	2.1 Select ***hand tools*** consistent with needs of the job 2.2 ***Check tools*** for serviceability and safety, and report faults 2.3 Clamp or fix ***materials*** in position 2.4 Use **hand tools** safely and effectively according to their intended use 2.5 Locate **hand tools** safely when not in immediate use
3. Select and use power tools	3.1 Select ***power tools and equipment*** consistent with needs of job and in accordance with standard work practice, and report any faults 3.2 Check tools for serviceability and safety, and report faults 3.3 Visually check power leads/hoses for serviceability/safety in accordance with the site safety plan 3.4 Clear route for safe placement of leads/hoses of identified hazards

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	3.5 Run electrical power leads to power supply so they are clear of traffic and covered where possible 3.6 Connect electric power leads to the power board or direct to power tool 3.7 Run air hoses out to the compressed air supply and cover where potential trip hazards exist 3.8 Connect hose to power tool and air supply 3.9 Use power tools safely and effectively in application processes 3.10 Locate power tools safely when not in use 3.11 Clean out and prepare for joint sealing 3.12 Complete joint sealing records
4. Clean up	4.1 Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.2 Clean, check, maintain and store machinery, tools and equipment in accordance with manufacturer's recommendations and standard work practices

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to seal concrete pavements: • apply legislative, organisation and site requirements and procedures • speak clearly and directly, listening carefully to instructions and information • interpret and understand the information required for the preparation and application of hand and power tools, including work instructions, quality assurance procedures, manufacturer's instructions, materials safety data sheets and equipment • apply teamwork to a range of situations, particularly in a safety context • solve problems particularly in teams and in dealing practically with safety issues • show initiative in adapting to changing work conditions or contexts particularly when working across a variety of work placements • manage time, particularly in organising priorities and planning work including the scheduling and use of equipment, materials and tools to avoid back tracking and re work • take responsibility for self organisation of work priorities • use technology related to determining requirements, the planning and application of hand and power tools, including the use of calculations, mechanical equipment and the reporting/recording of results
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to seal concrete pavements: • site and equipment safety requirements • hand tools and their application • portable power tools and their application • power sources • materials commonly used in the industry • equipment types, characteristics, technical capabilities and limitations • operational, maintenance and basic diagnostic procedures • materials safety data sheets (MSDS) and materials handling methods • project quality requirements • industry and worksite terminology • electrical and compressed air safety • JSA's/safe work method statement

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Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the sealing of concrete • implementation of requirements, procedures and techniques for the safe, effective and efficient sealing of concrete • working with others to undertake the sealing of concrete that meets all of the required outcomes • consistent timely sealing of concrete that safely, effectively and efficiently meets the required outcomes • conduct sealing of concrete pavements by: • application and instillation of sealer material and backer rods
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning

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	and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • seal 50lm of joint in accordance with specification • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake the sealing of concrete pavements
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may include:	• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, materials safety data sheets (MSDS) and diagrams or sketches • plans and specifications • quality requirements, including: dimensions and

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	tolerances, standards of work and material standards • safe work procedures or equivalent related to using hand and power tools
Safety requirements may include:	• protective clothing and equipment • use of tools and equipment • workplace environment and safety • handling of materials • use of fire fighting equipment • use of First Aid equipment • hazard control • hazardous materials and substances • personal protective equipment • emergency procedures related to equipment operation which may include: • emergency shutdown and stopping • extinguishing equipment fires • organisational first aid requirements and • evacuation
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and • clean-up management
Hand tools are to include but not be limited to:	• blowout pipe • spline roller • brooms • measuring tape • ruler/depth gauge
Checking tools is to include:	• checking of electrical safety/inspection tag for currency • equipment defect identification • assessment of conditions and hazards and determination of work requirements
Materials are:	• backer rods • joint sealant
Power tools may include those powered by but not limited to:	• 240 volt electricity (circular saw, mitre saw, drill, grinder, impact hammer) • pneumatic (wrench, grinder, jackhammer, screwdriver)

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	• battery driven (drill, grinder, circular saw, sander, impact hammer) and • hydraulics (portapower and attachments, jacking equipment, shoring systems)
Equipment is to include:	• power leads and • safety switches and • air hoses

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Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Custom Content Section

Not applicable.

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RIICRC321 Use automated paving guidance systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the use of automated paving guidance systems (APGS) in the control of concrete paving operations in the civil construction industry. It includes planning, preparing, setting-up, operating and shutting down operations for APGS. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:
Civil construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted ***task*** 1.3 Identify, obtain and implement signage requirements from the project ***traffic*** management plan 1.4 Select ***plant, tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5 Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Setup automated paving guidance system	2.1 Setup prisms within site tolerances and according to manufacturers specifications 2.2 Locate ***survey equipment*** according to worksite and manufacturer's specifications 2.3 Identify and establish control points and theodolite positions for planned operation 2.4 Verify survey model is consistent with worksite plans 2.5 Calibrate paver to tolerances within manufacturers and worksite specifications
3. Operate automated paving guidance system	3.1 Set ***APGS*** controls to automatic control settings 3.2 Check signal inputs and automated control is operational 3.3 Check freshly paved concrete for conformance against worksite model 3.4 Conduct ***paver***/APGS adjustments during operation

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	3.5 Reposition total station as required
4. Conduct shutdown operations	4.1 Confirm instructions from supervisor prior to shutdown procedure 4.2 Shutdown APGS in accordance with manufacturer's instructions 4.3 Lower sensors on paver 4.4 Clean, check, maintain and store total stations as per worksite requirements and manufacturer's instructions

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to APGS operations including: • apply legislative, organisation and site requirements and procedures for conducting road paving operations • apply legislative, organisation and site requirements and procedures for laying pavers • organise work activities • select and use relevant tools and equipment safely • identify and report on hazards related to the worksite and work activity • communicate effectively to receive and clarify work instructions
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct APGS operations including: • site and equipment safety requirements • site communication and hand signals • paver screed operations • aggregate and gravel types and sizes • longitudinal and transverse joints • equipment types, characteristics, technical capabilities and limitations • operational, maintenance and basic diagnostic procedures • site isolation and traffic control responsibilities and authorities • processes for the calculation of material uniformity and travel speed • materials safety data sheets and materials handling methods • quality requirements • civil construction terminology • safe operating techniques in all terrain • JSAs/safe work method statements

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Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting concrete road paver operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of APGS operations • working with others to undertake and complete APGS that meets all of the required outcomes • consistent timely completion of APGS operations that safely, effectively and efficiently meets the required outcomes • the conduct of APGS operations are to include the mandatory tasks from the unit scope and cover as a minimum: • setup, calibrate and pave for 200 meters within required conformance (3 times) • demonstrate ability to adjust paver (6 times): • 2 times horizontal (1 positive, 1 negative) • 2 times vertical (1 positive, 1 negative) • 2 times combination of above
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete concrete road paver operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

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Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
Site may include:	• formed/prepared roads • pads • highways • freeways • car parks • container yards • hard stands • footpaths and bikeways
Task may include:	• mixing and spreading granular materials • spreading concrete materials • mixing and spreading stabilised materials • spreading bituminous materials

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Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • parking sites • pedestrian areas
Plants, tools and equipment may include:	• shovels • measuring tapes • depth gauges • standard tool kits • string lines • thermometers • straight edges
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Survey equipment	• theodolite • automated laser device • stringlines and markers
Paver	• automated screed leveller
APGS	• GPS • automated laser detection systems • positioning systems

Unit Sector(s)

Road and Pavements Construction and Maintenance (General).

Custom Content Section

Not applicable.

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RIICRC322 Receive, check and record concrete deliveries

Modification History

Not applicable.

Unit Descriptor

This unit specifies the outcomes required to safely record delivery information for concrete delivered to concrete pavements.
The unit includes the conduct of planning, preparing, receiving, tipping, discharging, recording and cleaning up during concrete delivery operations. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:
Civil construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted ***task*** 1.3 Identify, obtain and implement signage requirements from the project ***traffic*** management plan 1.4 Select ***plant, tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5 Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Receive concrete	2.1 Identify survey datum points required to accurately locate material placement 2.2 Check ***delivery documents*** for accuracy against ordered material 2.3 Check delivery docket for compliance with test results 2.4 Check for compliance of delivery docket with batching times 2.5 Direct required action for non compliant loads 2.6 Direct concrete delivery vehicle to location for discharge
3. Tip/discharge concrete	3.1 Maintain ***safe working area*** around pour location 3.2 Establish actual pour location of discharged load 3.3 Discharge concrete from delivery vehicle directly or via chute or material handling equipment 3.4 Discharge concrete to required placement level 3.5 Visually assess load for ***uniformity and consistency*** to test

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	results recorded on delivery docket 3.6 Direct delivery vehicle safely away from pour location once discharge is complete
4. Record information	4.1 Record ***appropriate details*** from the delivery docket 4.2 Record the time and location of the discharge of the load 4.3 Record ***additional information*** as required by worksite procedures 4.4 Compete end of day records and dockets and pass onto appropriate site personnel completed days records
5. Clean up	5.1 Clean work area 5.2 Clean, check, maintain and store tools and equipment in line with relevant site procedures

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to receive, check and record concrete road paver deliveries including: • apply legislative, organisation and site requirements and procedures for concrete deliveries • organise work activities • select and use relevant tools and equipment safely • identify and report on hazards related to the worksite and work activity • communicate effectively to receive and clarify work instructions
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct receive, check and record concrete deliveries including: • site and equipment safety requirements • site communication and hand signals • aggregate and gravel types and sizes • equipment types, characteristics, technical capabilities and limitations • site isolation and traffic control responsibilities and authorities • materials safety data sheets and materials handling methods • quality requirements • civil construction terminology • safe operating techniques in all terrain • JSAs/safe work method statements • recording weather information • concrete mix types • concrete docket information • recording delivery information

Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of

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	this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the receipt, checking and recording of concrete deliveries • implementation of requirements, procedures and techniques for the safe, effective and efficient concrete deliveries • working with others to check concrete deliveries meet all of the required outcomes • consistent timely receipt, checking and recording of concrete deliveries that safely, effectively and efficiently meets the required outcomes • conduct recording of concrete deliveries ensure:: • an even feed of concrete into the paver • accurate recording/mapping of delivery location and additional information as required by site procedures • accurate recording and calculation of Rate of Evaporation • accurate check of concrete for compliance both from docket information and visual inspection • provide safe directions to delivery trucks • unloading on uneven surfaces or surfaces with grades is safely carried out • provide input and implementation of preparation of a VMP for the worksite
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a Civil Construction. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural

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	diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the receipt, checking and delivery of concrete.
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment

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	and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
Site may include:	• formed/prepared roads • pads • highways • freeways • car parks • container yards • hard stands • footpaths and bikeways
Task may include:	• recording concrete conditions and other relevant information • communicating with delivery driver including using hand signals • communicating with paver operator • identifying unloading operator and maintaining communication with the driver • visually assessing concrete for compliance
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas

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	• parking sites • pedestrian areas
Plants, tools and equipment may include:	• shovels • measuring tapes • standard tool kits • thermometers • recording sheets • weather stations
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Delivery documents	batch dockets from batching plant
Safe working area	• area immediately under the control of the receiver as designated on the worksite VMP
Uniformity and consistency	• visual assessment of mix homogeneity
Appropriate details	• slump • time batched • time discharged
Additional information	• periodically record concrete temperature, humidity, wind speed and Rate of Evaporation • record any disruptions to paving • record any changes in mix

•
•

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Custom Content Section

Not applicable.

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RIICRC323 Insert tie bars in fresh concrete

Modification History

Not applicable.

Unit Descriptor

This unit covers the insertion of tie bars in fresh concrete operations in the civil construction industry. It includes planning and preparing, setting up, conducting the insertion of tie bars into fresh concrete and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:
Civil construction

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted ***task*** 1.3 Identify, obtain and implement signage requirements from the project ***traffic*** management plan 1.4 Select ***plant, tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5 Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Setup operations	2.1 Verify quantity of bars meet task requirements 2.2 Confirm bars are ***fit for purpose*** 2.3 Confirm saw cut locations are marked out or programmed into paving computer as per site specifications 2.4 Check automatic program spacing 2.5 Check tie bar spacing and variations conform to plans 2.6 Check for safe operations and confirm operation of emergency stops
3. Operate tie bar system	3.1 Maintain safe working area around tie bar inserter 3.2 Maintain adequate stock of bars at tie bar inserter 3.3 Operate and monitor mechanical or manual tie bar insertion for correct location, alignment and depth (if sidebars) 3.4 Report missed bars or jamming immediately to the relevant personnel

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	3.5 Ensure location of any missed or non compliant insertion is recorded by relevant site personnel 3.6 Ensure concrete is fully compacted around the tie bar 3.7 Ensure magazine is sufficiently loaded at all times 3.8 Operate hiab (if fitted) to load magazine safely and accurately 3.9 Load magazine by hand according to correct procedures
4. Clean Up	4.1 Clean up work area at end of day 4.2 Return unused stockbars to store

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct tie bar insertion in wet concrete operations including: • apply legislative, organisation and site requirements and procedures for conducting road construction paver screeding operations • apply legislative, organisation and site requirements and procedures for laying pavers • organise work activities • select and use relevant tools and equipment safely • identify and report on hazards related to the worksite and work activity • communicate effectively to receive and clarify work instructions • handle materials correctly • operate hiab according to regulatory, workplace and manufacturer's specifications
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct tie insertion in wet concrete operations including: • site and equipment safety requirements • site communication and hand signals • paver screed operations • hiab operations • longitudinal and transverse joints • operational, maintenance and basic diagnostic procedures • materials safety data sheets and materials handling methods • quality requirements • civil construction terminology • safe operating techniques in all terrain • JSAs/safe work method statements

Evidence Guide

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Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the insertion of tie bars into fresh concrete • implementation of requirements, procedures and techniques for the safe, effective and efficient insertion of tie bars into fresh concrete • working with others to undertake the insertion of tie bars into fresh concrete that meets all of the required outcomes • consistent timely insertion of tie bars into fresh concrete that safely, effectively and efficiently meets the required outcomes • identify and correctly mark onsite changes in tie bar spacing from the plans • conduct insertion and compaction of tie bars to correct depth over 75 linear metres on a minimum of three (3) occasions • load a magazine on at least one occasion in accordance with manufacturer's procedures • set out manually inserted tie bars and corresponding saw cuts
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the insertion of tie bars in fresh concrete
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

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Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
Site may include:	• formed/prepared roads • pads • highways and major arterial roads • freeways • car and truck parks • container yards
Task may include:	• loading magazine • operating manual or automatic tie bar inserter • spreading concrete materials
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • parking sites • pedestrian areas

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Plant, tools and equipment may include:	• measuring tapes • depth gauges • standard tool kits • string lines • straight edges • screed • hiab
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Custom Content Section

Not applicable.

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RIICRC401A Apply the principles of flexible pavement construction

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of flexible pavement construction tasks in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of flexible pavement construction tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, supervising flexible pavement construction tasks within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking ***flexible pavement construction tasks*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the tasks 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** flexible pavement construction task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise flexible pavement construction tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - tonnage required
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret flexible pavement construction materials properties and test results,

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including:
  - soil density/moisture relationship
  - plasticity index
  - particle size distribution
- providing recommendations for the improvement of the safe, effective and efficient execution of flexible pavement construction tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise flexible pavement construction tasks:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational Health and Safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- flexible pavement construction plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of flexible pavement construction tasks
- flexible pavement construction task resource requirements and procedures
- activities scheduling requirements and procedures
- flexible pavement construction materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- flexible pavement construction monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- flexible pavement and related activities' terminology
- set out requirements and procedures

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- road geometry
- ground surface treatment requirements and procedures e.g. proof rolling
- pavement drainage requirements
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of flexible pavement construction tasks • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of flexible pavement construction tasks • working with others to plan, prepare and conduct the supervision of flexible pavement construction tasks • provision of clear and timely instruction and supervision by the individual of those involved in supervision of flexible pavement construction tasks • evidence of the consistent successful supervision of flexible pavement construction tasks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency.
	The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the supervision of flexible

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	pavement construction tasks • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the supervision of flexible pavement construction tasks
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Job plan is to include:	• human resource requirements • plant and machinery requirements

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	• construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational Health and Safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements

Flexible pavement construction may include:	• roads
	• airfields
	• industrial hardstands
	• open car parks
	• bicycle ways and footpaths
	• including the applying of:
	  • natural materials
	  • manufactured materials
	  • stabilised materials
	  • geofabrics
	  • surfacing, including:
	• asphalt
	• spray seal
	• line marking

Flexible pavement construction tasks may include:	• site preparation methods • extraction methods • load and haulage methods • placement methods • distribution methods • surface finishing methods • line, grade and level control methods • compaction methods • water application methods • line marking procedures • sediment control methods

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Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructs are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

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Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC402A Apply the principles of rigid pavement construction

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of rigid pavement construction tasks in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of rigid pavement construction tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for the supervision of rigid pavement construction within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking ***the rigid pavement construction tasks*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the tasks 2.2. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** rigid pavement construction task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise rigid pavement construction tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - tonnage required
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- conduct and interpret rigid pavement construction materials properties and test

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results, including:
  - slump testing
  - test cylinder preparation
- provide recommendations for the improvement of the safe, effective and efficient execution of rigid pavement construction tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise rigid pavement construction tasks:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- rigid pavement construction plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of flexible pavement construction tasks
- rigid pavement construction tasks resource requirements and procedures
- activities scheduling requirements and procedures
- rigid pavement construction materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- flexible pavement construction monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- rigid pavement construction and related activities' terminology
- set out requirements and procedures
- road geometry

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- ground surface treatment requirements and procedures e.g. proof rolling
- pavement drainage requirements
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of rigid pavement construction tasks • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of rigid pavement construction tasks • working with others to plan, prepare and conduct the supervision of rigid pavement construction tasks • provision of clear and timely instruction and supervision by the individual of those involved in the supervision of rigid pavement construction tasks • evidence of the consistent successful the supervision of rigid pavement construction tasks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the supervision of rigid pavement

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	construction tasks • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of rigid pavement construction tasks
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Rigid pavement construction may include:	• roads • airfields

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	• industrial hardstands
	• open car parks
	• including the applying of:
	  • concrete
	  • bound materials
	• line marking

Rigid pavement construction tasks may include:	• site preparation methods • extraction methods • load and haulage methods • placement methods • distribution methods • compaction methods • surface finishing methods • line, grade and level control methods • curing and hot weather concreting techniques • sediment control methods • line marking methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's

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	management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICRC403A Apply the principles of the stabilisation of materials

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of the stabilisation of materials tasks in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of the stabilisation of materials tasks are carried out in accordance with the accepted industry principles

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for the supervision of the stabilisation of materials tasks within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***stabilisation of materials tasks*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** the stabilisation of materials task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise the stabilisation of materials tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - tonnage required
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret stabilisation of materials properties and test results, including:

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- soil density/moisture relationship
  - plasticity index
- provide recommendations for the improvement of the safe, effective and efficient execution of stabilisation of materials tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise the stabilisation of materials tasks:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
  - binder safety and health requirements and procedures
  - materials safety data sheet (MSDS) requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- stabilisation of materials plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of flexible pavement construction tasks
- stabilisation of materials task resource requirements and procedures
- activities scheduling requirements and procedures
- stabilisation of materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- stabilisation of materials monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- asphalt placement and compaction and related activities' terminology
- works planning techniques

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- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the management of blasting operations • implementation of appropriate procedures and techniques for the safe, effective and efficient management of blasting operations • working with others to plan, prepare and conduct blasting operations • provision of clear and timely instruction and supervision by the individual of those involved in blasting operations • evidence of the consistent successful management of blasting operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct blasting operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the blasting

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	operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Stabilisation of materials may include:	• new pavement construction • existing pavement repair and maintenance

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Stabilisation of materials tasks may include:	• site preparation methods • extraction methods • load and haulage methods • placement methods • distribution methods • surface finishing methods • line, grade and level control methods • compaction and water application methods • sediment control methods • dust suppression methods • mixing methods • trimming methods • curing procedures • construction joint requirements and procedures
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives

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	• sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC404A Inspect and report on pavement condition

Modification History

Not applicable.

Unit Descriptor

This unit covers the inspection of and reporting on pavement condition in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of pavement condition are carried out in accordance with the accepted industry principles.

Application of the Unit

Pavement inspection methods covered in this unit include engineering survey, sampling and testing and visual inspection.
This unit is appropriate for those working in a supervisory role or as a technical specialist, inspect and report on pavement condition within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** for the ***inspection of and reporting on pavement condition*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** pavement condition inspection performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to inspect of and report on pavement condition:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret pavement condition materials properties and test results, including:

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- soil density/moisture relationship
- plasticity index
- particle size distribution
- identify pavement faults
- provide recommendations for the improvement of the safe, effective and efficient execution of pavement condition inspections

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to inspect of and report on pavement condition:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- pavement condition inspection plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of flexible pavement construction tasks
- pavement condition inspection resource requirements and procedures
- activities scheduling requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- pavement condition inspection methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- pavement condition and related activities' terminology
- set out requirements and procedures
- road geometry

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- ground surface treatment requirements and procedures e.g. proof rolling
- pavement drainage requirements
- works planning techniques
- types of pavement, including:
  - unbound
  - asphalt
  - spray seal
  - rigid
- potential pavement faults
- possible causes of pavement faults
- methods of rectifying pavement faults
- methods of refurbishing pavements
- methods of rehabilitating pavements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the inspection of and reporting on pavement condition • implementation of appropriate procedures and techniques for the safe, effective and efficient inspection of and reporting on pavement condition • working with others to plan, prepare and conduct the inspection of and reporting on pavement condition • provision of clear and timely instruction and supervision by the individual of those involved in the inspection of and reporting on pavement condition • evidence of the consistent successful inspection of and reporting on pavement condition
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the inspection of and reporting on pavement condition
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the inspection of and reporting on pavement condition

Guidance information for	Consult the SkillsDMC User Guide for further

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assessment	information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Pavements may include:	• roads • open car parks

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	• industrial hardstands

Inspection of and reporting on pavement condition may include:	• site preparation, including:
	  • traffic control
	  • safety measures
	• inspection methods, including:
	  • engineering survey
	  • sampling and testing
	  • visual inspection
	• pavement marking procedures
	• pavement condition recording methods

Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks

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Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC405A Carry out pavement condition measurement

Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of pavement condition measurement in Civil Construction. It includes the requirements for planning, preparing, initiating, monitoring, adjusting and reporting of pavement condition measurement.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, the carrying out of pavement condition measurement within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for pavement condition measurement	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access and share with team members the ***specific task information and requirements*** relevant to undertaking ***pavement condition measurement*** 1.3. Ensure that the pavement condition measurement equipment is prepared for the task 1.4. Prepare a ***job plan***, in conjunction with ***relevant team members***, which makes best use of the available resources
2. Initiate and undertake the measurement of pavement condition	2.1. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of the task 2.2. Issue clear and timely ***instructions*** to team members and others involved in the task 2.3. Complete the measurement of pavement condition
3. Complete pavement condition measurement post-operational requirements	3.1. Validate reading recorded by the pavement condition measurement equipment 3.2. Ensure plant equipment and tools maintenance requirements are carried out and recorded 3.3. Complete and submit reports as required 3.4. Recommend changes to improve the safety, efficiency and effectiveness of pavement condition measurement.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to carry out of pavement condition measurement:

- apply legislative, organisation and site requirements and procedures
- interpret client requirements and procedures
- interpret project engineering survey information
- interpret project specifications
- choose appropriate operational techniques for the execution of pavement condition measurement
- choose and assigning appropriate plant and equipment for the execution of pavement condition measurement
- calculate quantities for the execution of pavement condition measurement
- calibration of pavement condition measurement equipment
- validate of pavement condition measuring equipment readings
- determine task resource requirements
- schedule activities and materials delivery
- draft and administering job plans
- implement work zone traffic management plans
- prepare for and conducting of briefings, toolbox and site meeting
- prepare short messages
- prepare and presenting job reports
- prepare and maintaining log books and diaries
- provide team leadership
- assessment of individuals performances
- interpret pavement condition measurement test results
- provide recommendations for the improvement of the safe, effective and efficient execution of pavement condition measurement task

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to carry out of pavement condition measurement:

- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures

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- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- procurement requirements and procedures
- plant, equipment and tools maintenance requirements and procedures
- reporting requirements and procedures
- employment requirements and procedures
- workplace relationship requirements and procedures
- organisational and site operational requirements
- relationship between various areas of civil works
- operational techniques required for the execution of pavement condition measurement construction tasks
- pavement condition measurement plant and equipment capabilities
- team leadership techniques
- works planning techniques
- pavement condition measurement monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the carrying out of pavement condition measurement • implementation of appropriate procedures and techniques for the safe, effective and efficient carrying out of pavement condition measurement • working with others to plan, prepare and conduct the carrying out of pavement condition measurement • provision of clear and timely instruction and supervision by the individual of those involved in the carrying out of pavement condition measurement • evidence of the consistent successful carrying out of pavement condition measurement
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct pavement condition measurement
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of pavement condition measurement

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Specific task information and requirements may include:	• site meteorological data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • other company and contractors involved in the task or related tasks • coordination, timing and budgeting requirements
Pavement condition measurement may include:	• roads • busways
Job plan may include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements

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	• traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Team members may include:	• other members of the organisation's management team • experienced members of the team directly involved in the task sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks • experienced members of the team directly involved in the task
Resources may include:	• labour • plant, equipment and tools • highway vehicles • sub-contractor services
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRC406B Apply the principles of pavement maintenance

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of pavement maintenance tasks in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of pavement maintenance tasks are carried out in accordance with the accepted industry principles

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for the supervision of pavement maintenance tasks within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to ***undertaking pavement maintenance tasks*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** pavement maintenance task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise pavement maintenance tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
- volumes
- tonnage required
- grades
- percentages
- areas
- resource consumption figures, including required supply rates
- interpret pavement maintenance materials properties and test results, including:
- soil density/moisture relationship
- plasticity index
- particle size distribution
- identify pavement faults

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- provide recommendations for the improvement of the safe, effective and efficient execution of pavement maintenance tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise pavement maintenance tasks:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- pavement management systems and maintenance management systems
- pavement maintenance plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of pavement maintenance tasks, including:
- granular patching (bound and unbound)
- asphalt patching (small, large, thick and thin)
- skin patching (with binder and aggregate)
- pavement crack sealing
- cold run patching
- pavement maintenance task resource requirements and procedures
- activities scheduling requirements and procedures
- pavement maintenance materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- pavement maintenance monitoring methods
- potential pavement faults
- possible causes of pavement faults
- pavement drainage requirements
- snow and ice clearing requirements and procedures
- erosion control methods
- weed control methods

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- sand drift control methods
- stockpile site requirements and procedures
- borrow pit requirements and procedures
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- pavement maintenance and related activities' terminology
- set out requirements and procedures
- road geometry
- ground surface treatment requirements and procedures e.g. proof rolling
- pavement drainage requirements
- works planning techniques
- monitoring methods

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of pavement maintenance tasks • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of pavement maintenance tasks • working with others to plan, prepare and conduct the supervision of pavement maintenance tasks • provision of clear and timely instruction and supervision by the individual of those involved in pavement maintenance tasks • evidence of the consistent successful supervision of pavement maintenance tasks

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Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's:

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	• implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate's: • working with others to plan, prepare and conduct the supervision of pavement maintenance tasks • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the supervision of pavement maintenance tasks
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian Standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Specific task information and requirements may include:	• site meteorological data, including: • rainfall • humidity • temperature • wind • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related tasks • coordination, timing and budgeting requirements
Pavement maintenance may include:	• flexible pavement maintenance, including • natural pavement materials • manufactured pavement materials • asphalt surfaced • spray seal surfaced • slurry surfaced • rigid pavement maintenance, with and without asphalt surfacing
Pavement maintenance tasks may include:	• site preparation methods • extraction methods • load and haulage methods • placement methods

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RANGE STATEMENT	
	• distribution methods • application of prime seal and pre-seal • application of bituminous emulsion and aggregates • placement and compaction of Asphalt • placement and compaction of cold mix • placement and compaction of stabilisation • surface and wear course finishing methods • line, grade and level control methods • compaction and water application methods • sediment control methods • traffic management requirements and procedures • rigid pavement repair methods • median, kerb and gutter repair and maintenance requirements and procedures • side drain maintenance methods • shoulder repair methods • line marking methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services

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RANGE STATEMENT	
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRM201A Escort mobile road marking operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the escort of mobile road marking operations in the civil construction industry. It includes planning and preparing, establishing traffic control operations, using radio communication, positioning traffic controls, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.4. Select vehicles, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Establish traffic control operations	2.1. Check arrow boards and/or rotating beacon warning signs for serviceability and suitability 2.2. Determine traffic control requirements 2.3. Select traffic control in accordance with site and road traffic requirements 2.4. Assess and record site and traffic variables 2.5. Position advance warning signs and traffic control devices as specified 2.6. Determine correctly and confirm maximum speed limit for traffic control operations
3. Use radio communication	3.1. Adjust ***radio*** controls for optimum transmission and reception 3.2. Test and verify radio contact 3.3. Transmit radio messages clearly and concisely transmitted 3.4. Check radio contact periodically
4. Position traffic controls	4.1. Position traffic control signs and display on vehicles 4.2. Display and operate vehicle warning lights 4.3. Position vehicles in the work convoy according to specifications

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	4.4. Assist work crew to place advanced warning signs as required 4.5. Control traffic effectively to protect work crew
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store vehicles, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to escort mobile road marking operations:

- apply legislative, organisation and site requirements and procedures for escort of mobile road marking operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to escort mobile road marking operations:

- site and equipment safety requirements
- mobile traffic control and general traffic control
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of travel speed
- project quality requirements
- civil construction terminology
- project traffic management plans
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for escorting mobile road marking operations • implementation of requirements, procedures and techniques for the safe, effective and efficient escorting of mobile road marking operations • working with others to undertake and complete the escorting of mobile road marking operations that meets all of the required outcomes • consistent timely escorting of mobile road marking operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the escorting of mobile road marking operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• roads • bridges • similar sealed surfaces
Signage requirements may include:	• escort vehicle • vehicle mounted signage • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • highways
Tools and equipment may include:	• traffic control vehicles • radios • batteries • signage • warning lights • beacons • arrow boards
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Radio transmissions may include:	• VHF • UHF

Unit Sector(s)

Road Marking

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRM202A Handle and store road marking materials

Modification History

Not applicable.

Unit Descriptor

This unit covers the handling and storage of road marking materials in the civil construction industry. It includes planning and preparing, manually handling road marking materials, mechanically handling materials, handling and removing waste safely, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.4. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Manually handle road marking materials	2.1. Identify, select and sort road marking ***materials*** for particular tasks to manufacturer's recommendations and/or supervisor's instructions/specifications 2.2. Identify handling characteristics of materials and apply appropriate handling techniques 2.3. Apply specific handling requirement for hazardous materials according to materials safety data sheets (MSDS) and regulatory requirements 2.4. Place materials protectively, clear of traffic ways, so that they are easily identified, retrieved and not damaged 2.5. Erect signage and barricades where applicable, to isolate stored materials from workplace traffic or public access
3. Mechanically handle materials	3.1. Prepare materials for mechanical handling in accordance with type of material and plant/equipment to be used 3.2. Conduct loading, unloading, moving, locating and/or installing of materials in accordance to job requirements 3.3. Mechanically handle materials safely according to manufacturer's recommendations
4. Handle and remove waste	4.1. Handle waste materials correctly and safely

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safely	according to materials safety data sheets (MSDS) and requirements of regulatory authorities 4.2. Identify hazardous material for separate handling 4.3. Dispose of non-toxic materials using correct procedures
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Stack, stock pile or store unused materials safely 5.3. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to handle and store road marking materials:

- apply legislative, organisation and site requirements and procedures for handling and storing road marking materials
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to handle and store road marking materials:

- site and equipment safety requirements
- road marking materials
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements
- materials safety data sheets (MSDS) and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for handling and storing road marking materials • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of handling and storing road marking materials • working with others to undertake and complete the handling and storing of road marking materials that meets all of the required outcomes • consistent timely completion of handling and storing of road marking materials that safely, effectively and efficiently meets the required outcomes • safe storage procedures for a combination of any two of paint, solvent, glass beads, epoxy, additives and thermo-plastic on two projects in accordance with MSDS requirements
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the handling and storing of road marking materials

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• on site storage facilities • depot storage facilities
Tools and equipment may include:	• pallet trolley • materials hoist • forklift • vehicle mounted crane
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Materials may include:	• paints • solvent • long life products (two pack epoxy, thermo plastic) • glass beads • skid resistant additives

Unit Sector(s)

Road Marking

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRM203A Conduct pedestrian road marking operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of pedestrian road marking operations in the civil construction industry. It includes planning and preparing, selecting fuel, lubricants, tools and equipment, carrying out operator checks and maintenance, using pedestrian road marking plant, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the **site** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Select fuel, lubricants, tools and equipment	2.1. Select fuel and lubricants according to manufacturer's manual 2.2. Select tools and equipment in accordance with required machinery checks
3. Carry out operator checks and maintenance	3.1. Check and adjust fuel, oil, hydraulic fluid filters and water levels according to manufacturer's manual 3.2. Tighten and maintain bolts, nuts and attachment couplings 3.3. Check function of controls and gauges and adjust where necessary 3.4. Conduct standard start-up and shutdown procedures 3.5. Carry out periodic maintenance in accordance with the operator's manual 3.6. Locate plant and equipment safely when not in immediate use
4. Use pedestrian road marking plant	4.1. Identify site hazards for use of ***pedestrian road marking plant*** 4.2. Configure ***lines*** to specification based on a computerised program 4.3. Apply new lines to the new or resurfaced ***area***

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	4.4. Superimpose new lines over old lines on existing surfaces 4.5. Operate line cut on/cut off device according to the job specification 4.6. Apply road marking material to the surface providing an even coverage
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Return surplus fuel, lubricants, paints and beads to storage 5.3. Clean, check, maintain and store vehicles, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct pedestrian road marking operations:

- apply legislative, organisation and site requirements and procedures for conducting pedestrian road marking operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct pedestrian road marking operations:

- site and equipment safety requirements
- walk behind pedestrian road marking activities and techniques
- road markings
- road marking materials
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting pedestrian road marking operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of pedestrian road marking operations • working with others to undertake and complete pedestrian road marking operations that meets all of the required outcomes • consistent timely completion of pedestrian road marking operations that safely, effectively and efficiently meets the required outcomes • placement of a minimum of 20m2 of new marking or remarking of existing markings are to be placed with a walk behind pedestrian road marking machine to the specified tolerance. This is to include any four of the types listed in the Range statement • placement of a minimum of 100 lineal metres of new line marking or remarking of existing markings with a pedestrian road marking machine to the specified tolerance. This is to include any four of the types listed in the Range Statement
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency

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	management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete pedestrian road marking operations

Guidance information for	Consult the SkillsDMC User Guide for further

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assessment	information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• roads • bridges • footpaths • sports courts and fields • car parks • cycle paths • factories • airports • walking tracks and similar sealed surfaces
Signage requirements may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas • highways
Tools and equipment may include:	• walk behind pedestrian road marking equipment (self propelled or standard) • hand held applicators • filters • spray tips • maintenance tools
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Pedestrian road marking plant will be:	• equal to or less than 40 litre tank capacity and may include the use of a self propelled drive

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Lines may include:	• transverse and longitudinal markings which may include: • edge lines, • arrows • lane lines (broken and unbroken) • separation lines (broken and unbroken) • barrier lines (one direction and both directions) • continuity lines • turn lines • outline • stop lines • holding lines • give way lines • pedestrian crosswalk lines • diagonal and chevron markings • numerals • parking areas and kerb markings
Area may include:	• chip seal, asphalt or concrete
Materials may include:	• paints • solvents • long life products (two pack epoxy, thermo plastic) • glass beads • skid resistant additives

Unit Sector(s)

Road Marking

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRM204A Prepare surface for road marking

Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation of surface for road marking in the civil construction industry. It includes planning and preparing, preparing surface and set out, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Prepare surface and set out	2.1. Remove hazards and fixtures from the area 2.2. Select equipment and/or product and prepare for ***removing*** markings 2.3. Identify location for ***line*** marking 2.4. Clear ***area*** of dirt, debris and other contaminants 2.5. Identify location for line marking and set out with control points to drawings, job requirements and/or specifications 2.6. Spot straight lines and curves in preparation for marking 2.7. Remove pre-existing visible marks/lines to specification
3. Clean up	3.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 3.2. Store unused materials in accordance with job requirements 3.3. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to prepare surface for road marking:

- apply legislative, organisation and site requirements and procedures for preparation of surface for road marking
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to prepare surface for road marking:

- site and equipment safety requirements
- substrate preparation techniques and processes
- road markings
- redundant marking removal materials and primers
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and curing times
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for preparation of surface for road marking • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of preparation of surface for road marking • working with others to undertake and complete the preparation of surface for road marking that meets all of the required outcomes • consistent timely completion of preparation of surface for road marking that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the preparation of surface for road marking

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• roads • bridges • footpaths • sports courts and fields • car parks • cycle paths • factories • airports • walking tracks and similar sealed surfaces
Signage requirements may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas • highways
Tools and equipment may include:	• scrapers • brooms • shovels • line grinders • Planers • sand blasters • water blasters • emulsion sprayers • water trucks • shot blasters
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration

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	• dust and clean-up management
Removing may include:	• water grit blasting, • shot blasting • grinding • sand blasting • water blasting

Line may include:	• transverse and longitudinal markings which may include:
	  • barrier lines (one direction and both directions)
	  • edge lines
	  • arrows
	  • shapes
	  • symbols
	  • lane lines (broken and unbroken)
	  • separation lines (broken and unbroken)
	  • continuity lines
	  • turn lines
	  • outline
	  • stop lines
	  • holding lines
	  • stop and give way lines
	  • pedestrian crosswalk lines
	  • diagonal and chevron markings
	  • numerals
	  • parking areas
	  • kerb markings

Area may include:	• chip seal • asphalt • concrete
Materials may include:	• abrasives • emulsions

Unit Sector(s)

Road Marking

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRM205A Conduct road marking measuring operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of road marking measuring operations in the civil construction industry. It includes planning and preparing, obtaining measurements, maintaining measuring devices, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.4. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Obtain measurements	2.1. Select appropriate device or equipment to achieve required ***measurement*** 2.2. Use correct and appropriate measuring technique according to manufacturer's manual 2.3. Measure and record finest graduation of device without error 2.4. Obtain and record measurements
3. Maintain measuring devices	3.1. Undertake routine care and storage of devices to manufacturer's specification or standard operating procedure 3.2. Check and calibrate measuring devices
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.2. Clean, check, maintain and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct road marking measuring operations:

- apply legislative, organisation and site requirements and procedures for conducting road marking measuring operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct road marking measuring operations:

- site and equipment safety requirements
- road marking measuring procedures
- road markings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material usage, application rates and costings
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting road marking measuring operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of road marking measuring operations
	• working with others to undertake and complete road marking measuring operations that meets all of the required outcomes
	• consistent timely completion of road marking measuring operations that safely, effectively and efficiently meets the required outcomes
	• measurement and quantification of all road markings for:
	  • one four way intersection
	  • one residential street
	  • one 2 kilometre section of road
	  • one car park

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection

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	and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete road marking measuring operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• roads • bridges • footpaths • sports courts and fields • car parks • cycle paths • factories • airports • walking tracks and similar sealed surfaces
Signage requirements may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas • highways
Tools and equipment may include:	• measuring tapes • measuring wheels • gauges • rally metres • computerised measuring devices
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Measurement of lines may include:	• transverse and longitudinal markings which may include: • barrier lines (one direction and both directions)

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	• edge lines • arrows • shapes • symbols • lane lines (broken and unbroken) • separation lines (broken and unbroken) • continuity lines • turn lines • outline • stop lines • holding lines • stop and give way lines • pedestrian crosswalk lines • diagonal and chevron markings • numerals • parking areas • kerb markings

Unit Sector(s)

Road Marking

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRM206A Conduct airless and atomised spraying operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of airless and atomised spraying operations in the civil construction industry. It includes planning and preparing, preparing surface and set out, preparing marking materials, applying road marking materials, measuring work, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.4. Select ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Prepare surface and set out	2.1. Clear ***area*** of dirt, debris and other contaminants 2.2. Identify location for ***line marking*** and set out with control points to requirements or specifications 2.3. Spot straight lines and curves in preparation for marking 2.4. Remove pre-existing visible marks/lines to specification
3. Prepare marking materials	3.1. Mix marking ***material*** and prepare in accordance with manufacturer's and job specifications 3.2. Adjust additives and consistency of material to allow easy application and appropriate drying time to manufacturer's recommendations 3.3. Transfer marking material carefully to applicator container
4. Apply road marking materials	4.1. Select equipment relevant to the task and prepare for operation 4.2. Apply airless and/or atomised spray equipment across the surface with the correct movement and pressure 4.3. Apply road marking material to the surface

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	providing an even coverage in accordance with the job specification 4.4. Identify and correct defects in the coating 4.5. Maintain equipment in accordance with manufacturer's specifications
5. Measure work	5.1. Assess, record and report work to comply with job specification 5.2. Measure, calculate and quantify amount of line marking completed 5.3. Identify and report non conforming work
6. Clean up	6.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 6.2. Clean, check, maintain and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct airless and atomized spraying operations:

- apply legislative, organisation and site requirements and procedures for conducting airless and atomized spraying operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct airless and atomized spraying operations:

- site and equipment safety requirements
- airless and atomised spraying road marking activities and techniques
- road markings
- road marking materials
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and movement speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting airless and atomized spraying operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of airless and atomized spraying operations • working with others to undertake and complete airless and atomized spraying operations that meets all of the required outcomes • consistent timely completion of airless and atomized spraying operations that safely, effectively and efficiently meets the required outcomes • organisation for the application of at least 30m^2 of transverse lines within tolerances specified using airless or atomised spray equipment
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete airless and atomized spraying operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• roads • bridges • footpaths • sports courts and fields • car parks • cycle paths • factories • airports • walking tracks and similar sealed surfaces
Signage requirements may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas • highways
Tools and equipment may include:	• airless or atomised spray equipment • filters • spray tips • maintenance tools
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Area may include:	• chip seal • asphalt • concrete
Line marking may include:	• transverse and longitudinal markings which

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	may include: • barrier lines (one direction and both directions) • edge lines • arrows • shapes • symbols • lane lines (broken and unbroken) • separation lines (broken and unbroken) • continuity lines • turn lines • outline • stop lines • holding lines • stop and give way lines • pedestrian crosswalk lines • diagonal and chevron markings • numerals • parking areas • kerb markings
Material may include:	• paints • solvents • long life products (two pack epoxy, thermo plastic)

Unit Sector(s)

Road Marking

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRM207A Install raised pavement markers

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of raised pavement markers in the civil construction industry. It includes planning and preparing, preparing surface and set out, preparing marking materials, applying raised pavement markers, measuring work, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Prepare surface and set out	2.1. Clear ***area*** of dirt, debris and other contaminants 2.2. Identify ***location*** for ***raised pavement markers*** and position to control point requirements or specifications 2.3. Remove defective raised pavement markers where required 2.4. Prime marked location for raised pavement markers in readiness for road marking application
3. Prepare marking materials	3.1. Mix or prepare marking material in accordance with manufacturer's and job specifications 3.2. Adjust additives and consistency of material to allow easy application and appropriate curing time 3.3. Transfer marking material carefully to applicator container
4. Apply raised pavement markers	4.1. Select equipment relevant to the task and prepare for operation 4.2. Use equipment with the correct movement and pressure 4.3. Apply material to job specification

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	4.4. Identify and correct defects with the material 4.5. Maintain equipment in accordance with manufacturer's specifications
5. Measure work	5.1. Assess, record and report work to comply with job specification 5.2. Calculate and quantify amount of raised pavement markers completed 5.3. Identify and report non conforming work
6. Clean up	6.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install raised pavement markers:

- apply legislative, organisation and site requirements and procedures for installation of raised pavement markers
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install raised pavement markers:

- site and equipment safety requirements
- raised pavement marking activities and techniques
- road markings
- raised pavement markers
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of marker requirements, placement rates and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing raised pavement markers • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installation of raised pavement markers • working with others to undertake and complete the installation of raised pavement markers that meets all of the required outcomes • consistent timely completion of the installation of raised pavement markers that safely, effectively and efficiently meet the required outcomes • installation of 200 permanent reflective or non reflective raised pavement markers on the various line configurations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of raised pavement markers

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings,

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	structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• roads • bridges • footpaths • sports courts and fields • car parks • cycle paths • factories • airports • walking tracks and similar sealed surfaces
Signage requirements may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas • highways
Tools and equipment may include:	• walk behind pedestrian machines, • hand held burners • two pack applicators • maintenance tools
Area may include:	• chip seal • asphalt • concrete • new or existing work

Location may include:	• transverse and longitudinal markings which may include:
	  • barrier lines (one direction and both directions)
	  • edge lines
	  • arrows

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	• shapes • symbols • lane lines (broken and unbroken) • separation lines (broken and unbroken) • continuity lines • turn lines • outline • stop lines • holding lines • stop and give way lines • pedestrian crosswalk lines • diagonal and chevron markings • numerals • parking areas • kerb markings
Raised pavement markers may include:	• permanent • temporary • reflective • non reflective • detour reflective
Materials may include:	• hot melt adhesives • burn on pads • two pack epoxies

Unit Sector(s)

Road Marking

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRM301A Conduct ride on road marking operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of ride on road marking operations in the civil construction industry. It includes planning and preparing, selecting fuel, lubricants, tools and equipment, carrying out operator checks and maintenance, using ride on road marking plant, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.4. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Select fuel, lubricants, tools and equipment	2.1. Select fuel and lubricants according to manufacturer's manual 2.2. Select tools and equipment in accordance with required machinery checks
3. Carry out operator checks and maintenance	3.1. Check and adjust fuel, oil, hydraulic fluid filters and water levels according to manufacturer's manual 3.2. Tighten and maintain bolts, nuts and attachment couplings 3.3. Check and adjust function of controls and gauges where necessary 3.4. Conduct standard start-up and shutdown procedures 3.5. Carry out periodic maintenance 3.6. Safely locate plant and equipment when not in immediate use
4. Use ride on road marking plant	4.1. Identify site hazards for use of road marking plant 4.2. Configure ***lines*** to specification 4.3. Apply new lines to the new or resurfaced ***area*** providing an even coverage in accordance with job specifications 4.4. Superimpose new lines over old lines on

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	existing surfaces providing an even coverage 4.5. Operate line cut on/cut off device according to the job specification
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Return surplus fuel, lubricants, paints and beads to storage 5.3. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct ride on road marking operations:

- apply legislative, organisation and site requirements and procedures for conducting ride on road marking operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct ride on road marking operations:

- site and equipment safety requirements
- ride on road marking activities and techniques
- road markings
- road marking materials
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting ride on road marking operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of ride on road marking operations
	• working with others to undertake and complete the ride on road marking operations that meets all of the required outcomes
	• consistent timely completion of ride on road marking operations that safely, effectively and efficiently meets the required outcomes
	• placement of new lines for a minimum of one kilometre of each of the following, with a ride on road marking machine to the specified tolerance:
	  • centre line (to include separation line, barrier line one direction and barrier lines both directions)
	  • edge lines
	• re-marking over existing lines for a minimum of one kilometre of each of the following, with a ride on road marking machine to the specified tolerance:
	  • centre line (to include separation line, barrier line one direction and barrier lines both directions)
	  • edge lines

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors,

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	assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the

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	candidate's: • working with others to undertake and complete ride on road marking operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• roads • bridges • footpaths • sports courts and fields • car parks • cycle paths • factories • airports • walking tracks and similar sealed surfaces
Signage requirements may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant refers to:	• ride on road marking machines greater than 40 litres and less than 300 litres in tank capacity and may include the use of a line gap configuration computer
Tools and equipment may include:	• ride on road marking equipment or similar • safety lights • filter tips • maintenance tools
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Lines may include:	• longitudinal markings including • separation lines (broken and unbroken)

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	• barrier lines (one direction and both directions) • edge lines • lane lines (broken and unbroken) • continuity lines • turn lines • outline markings
Area may include:	• chip seal • asphalt • concrete
Materials may include:	• paints • solvents • long life products (two pack epoxy, thermo plastic) • glass beads • skid resistant additives

Unit Sector(s)

Road Marking

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRM302A Conduct long line road marking operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of long line road marking operations in the civil construction industry. It includes planning and preparing, conducting pre-operational checks, operating long line road marking plant, carrying out driver maintenance, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.4. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Conduct pre-operational checks	2.1. Check/inflate tyres using safe procedures and in accordance with operator's manual and site conditions 2.2. Determine risk and hazard for safe operation 2.3. Carry out start up, shutdown and ***communications*** procedures 2.4. Check road marking plant controls and functions, including brakes and manoeuvrability for serviceability, and report faults
3. Operate long line road marking plant	3.1. Manage engine power to ensure efficiency of plant movements and to minimise damage to the engine and gears 3.2. Position vehicle correctly prior to ***marking*** run to enable uninterrupted flow of road marking ***material*** 3.3. Maintain control and alignment on marking run 3.4. Apply road marking material to the ***surface*** providing an even coverage 3.5. Park and secure vehicle in accordance with manufacturer's specifications, company procedures and legal requirements

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4. Carry out driver maintenance	4.1. Conduct inspection and fault finding in accordance with manufacturer's specifications and site requirements 4.2. Select appropriate replacement parts and materials 4.3. Remove worn or defective parts safely according to manufacturer's manual and appropriate OHS regulations 4.4. Carry out routine operational servicing and lubrication tasks 4.5. Carry out minor maintenance 4.6. Record operator maintenance work in line with company policy and industry guidelines
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Return surplus fuel and lubricants to storage 5.3. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct long line road marking operations:

- apply legislative, organisation and site requirements and procedures for conducting long line road marking operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct long line road marking operations:

- site and equipment safety requirements
- ride on road marking activities and techniques
- road markings
- road marking materials
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and travel speed
- materials safety data sheets (MSDS) and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting long line road marking operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of long line road marking operations
	• working with others to undertake and complete the long line road marking operations that meets all of the required outcomes
	• consistent timely completion of long line road marking operations that safely, effectively and efficiently meets the required outcomes
	• placement of new lines for a minimum of five kilometres of each of the following, with a long line road marking machine to the specified tolerance:
	  • centre line (to include separation line, barrier line one direction and barrier line both directions)
	  • edge lines
	• re-marking over existing lines for a minimum of five kilometres of each of the following, with a long line road marking machine to the specified tolerance:
	  • centre line (to include separation line, barrier line one direction and barrier line both directions)
	  • edge lines

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors,

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	assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the

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	candidate's: • working with others to undertake and complete long line road marking operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings,

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	structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• roads • bridges • footpaths • sports courts and fields • car parks • cycle paths • factories • airports • walking tracks and similar sealed surfaces
Signage requirements may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant refers to:	• long line road marking machines with a greater tank capacity of 300 litres and a line gap configuration computer and may include truck mounted, rigid and articulated
Tools and equipment may include:	• long line road marking equipment (may be single or two person operation) equipped with line configuration computers • filters • tips • basic tool kits
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise

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	• vibration • dust and clean-up management
Communications may include:	• verbal instructions • two way radio • hand signals • mobile phone

Marking may include:	• longitudinal markings including:
	  • separation lines (broken and unbroken)
	  • barrier lines (one direction and both directions)
	  • lane lines (broken and unbroken)
	  • edge lines
	  • separation lines
	  • continuity lines
	  • outline markings

Materials may include:	• paints • solvents • long life products (two pack epoxy, thermo plastic) • glass beads • skid resistant additives
Surface may include:	• chip seal • asphalt • concrete

Unit Sector(s)

Road Marking

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICRM303A Conduct thermo plastic road marking operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of thermo plastic road marking operations in the civil construction industry. It includes planning and preparing, preparing surface and set out, preparing marking materials, applying road marking materials, measuring work, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Prepare surface and set out	2.1. Clear ***area*** of dirt, debris and other contaminants 2.2. Identify location for line marking and set out with control points to requirements or specifications 2.3. Spot straight lines and curves in preparation for marking 2.4. Remove pre-existing visible marks/lines where required 2.5. Prime marked location for ***lines*** in readiness for road marking application
3. Prepare marking materials	3.1. Mix and prepare marking material in accordance with manufacturer's and job specifications 3.2. Heat material to manufacturer's specifications to allow easy and consistent application 3.3. Transfer marking material safely to applicator container
4. Apply road marking materials	4.1. Select equipment relevant to the task and prepare for operation 4.2. Use equipment with the correct movement and pressure

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	4.3. ***Apply*** road marking ***material*** to the surface providing an even coverage 4.4. Identify and correct defects in the thermo plastic material 4.5. Maintain equipment in accordance with manufacturer's specifications
5. Measure work	5.1. Assess, record and report work to comply with job specification 5.2. Calculate and quantify amount of line marking completed 5.3. Identify and report non conforming work
6. Clean up	6.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct thermo plastic road marking operations:

- apply legislative, organisation and site requirements and procedures for conducting thermo plastic road marking operations
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct thermo plastic road marking operations:

- site and equipment safety requirements
- thermo plastic road marking activities and techniques
- road markings
- thermo plastic materials
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting thermo plastic road marking operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of thermo plastic road marking operations • working with others to undertake and complete thermo plastic road marking operations that meet all of the required outcomes • consistent timely completion of thermo plastic road marking operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete thermo plastic road marking operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• roads • bridges • footpaths • sports courts and fields • car parks • cycle paths • factories • airports • walking tracks and similar sealed surfaces
Signage requirements may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• long line machines • ride on road marking machines • walk behind pedestrian machines • airless or atomised spray equipment • filters • spray tips • maintenance tools
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Area may include:	• chip seal • asphalt • concrete

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Lines may include:	• transverse and longitudinal markings including:
	  • barrier lines (one direction and both directions),
	  • edge lines
	  • arrows
	  • shapes
	  • symbols
	  • lane lines (broken and unbroken)
	  • separation lines (broken and unbroken)
	  • continuity lines
	  • turn lines
	  • outline
	  • stop lines
	  • holding lines
	  • stop and give way lines
	  • pedestrian crosswalk lines
	  • diagonal and chevron markings
	  • numerals
	  • parking areas
	  • kerb markings

Applying may include:	• spraying • screeding • extruding
Material may include:	• thermo plastics • primers

Unit Sector(s)

Road Marking

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICSG401A Apply the principles of civil concrete structures construction

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of civil concrete structures construction tasks in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of civil concrete structures construction tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for civil concrete structures construction tasks within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***civil concrete structures construction tasks*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** civil concrete structures construction task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise civil concrete structures construction tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- Interpret civil concrete structures construction materials properties and test results, including:

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- concrete slump tests
- concrete cylinder tests
- provide recommendations for the improvement of the safe, effective and efficient execution of civil concrete structures construction tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise civil concrete structures construction tasks:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- excavation shoring requirements and procedures
- slope management requirements and procedures
- formwork requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- civil concrete structures construction plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of civil concrete structures construction tasks
- civil concrete structures construction task resource requirements and procedures
- activities scheduling requirements and procedures
- civil concrete structures construction materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- civil concrete structures construction monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques

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- estimating principles
- civil works construction sequencing
- civil concrete structures construction and related activities terminology
- set out requirements and procedures
- ground surface treatment requirements and procedures e.g. proof rolling
- pavement drainage requirements
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of civil concrete structures construction tasks • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of civil concrete structures construction tasks • working with others to plan, prepare and conduct civil concrete structures construction tasks • provision of clear and timely instruction and supervision by the individual of those involved in civil concrete structures construction tasks • evidence of the consistent successful supervision of civil concrete structures construction tasks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct civil concrete structures construction tasks
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the civil concrete structures construction tasks

Guidance information for	Consult the SkillsDMC User Guide for further

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assessment	information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Civil concrete structures may include:	• bridges • jetties and wharves

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	• retaining walls • water storage tanks and small dams • noise barriers • culverts • safety barriers • foundations
Civil concrete structures construction tasks may include:	• site preparation methods • site set out methods • excavation methods • shoring methods • slope management methods • formwork installation methods • reinforcement placement methods • concrete transport, placement, compaction and finishing methods • concrete curing methods • formwork stripping methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • excavation shoring requirements • slope management requirements • formwork requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials

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	• shoring materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Civil Structures (General)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICSG402A Apply the principles of civil steel structures construction

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of civil steel structures construction tasks in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of civil steel structures construction tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for civil steel structures construction tasks within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***civil steel structures construction tasks*** 1.3. Ensure a ***job plan***, is available which makes best use of the available resources and meets the civil steel structures construction task requirements
2. Ensure initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the civil steel structures construction tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the civil steel structures construction tasks 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** civil steel structures construction task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to civil steel structures construction practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise civil steel structures construction tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret civil steel structures construction materials properties and test results
- provide recommendations for the improvement of the safe, effective and efficient

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execution of civil steel structures construction tasks
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise civil steel structures construction tasks: • risk assessment and management requirement and procedures • statutory compliance requirements and procedures • occupational health and safety requirements and procedures • environmental management requirements and procedures • quality management requirements and procedures • work zone traffic management requirements and procedures • contract management requirements and procedures • communication requirements and procedures • administrative requirements and procedures • civil steel structures construction plant and equipment capabilities and application • plant, equipment and tools maintenance requirements and procedures • operational techniques for the execution of civil steel structures construction tasks • civil steel structures construction task resource requirements and procedures • activities scheduling requirements and procedures • civil steel structures construction materials delivery requirements and procedures • job plan drafting of and administration requirements and procedures • reporting requirements and procedures • workplace relationship requirements and procedures • organisational, client and site operational requirements • relationship between various areas of civil works • team leadership techniques • works planning techniques • civil steel structures construction monitoring methods • engineering survey principles • materials quality and delivery requirements and procedures • mentoring techniques • estimating principles • civil works construction sequencing • civil steel structures construction and related activities terminology • set out requirements and procedures • ground surface treatment requirements and procedures e.g. proof rolling • pavement drainage requirements • works planning techniques • monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of civil steel structures construction tasks • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of civil steel structures construction tasks • working with others to plan, prepare and conduct civil steel structures construction tasks • provision of clear and timely instruction and supervision by the individual of those involved in civil steel structures construction tasks • evidence of the consistent successful supervision of civil steel structures construction tasks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct civil steel structures construction tasks
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of civil steel structures construction tasks

Guidance information for	Consult the SkillsDMC User Guide for further

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assessment	information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirement may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Civil steel structures may include:	• bridges • jetties

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	• sign gantries • vertical sign supports • noise barrier supports
Civil steel structures construction tasks may include:	• site preparation methods • site set out methods • steel transport, placement, support, fixing methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational Health and Safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations

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	who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Civil Structure (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICSG403A Apply the principles of civil timber structures construction

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of civil timber structures construction tasks in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of civil timber structures construction tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for civil timber structures construction tasks within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***civil timber structures construction tasks*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** civil timber structures construction task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise civil timber structures construction tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret civil timber structures construction materials properties and test results
- provide recommendations for the improvement of the safe, effective and efficient

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execution of civil timber structures construction tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise civil timber structures construction tasks:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- civil timber structures construction plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of civil timber structures construction tasks
- civil timber structures construction task resource requirements and procedures
- activities scheduling requirements and procedures
- civil timber structures construction materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- civil timber structures construction monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- civil timber structures construction and related activities terminology
- set out requirements and procedures
- road geometry
- ground surface treatment requirements and procedures e.g. proof rolling
- pavement drainage requirements

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- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of civil timber structures construction tasks • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of civil timber structures construction tasks • working with others to plan, prepare and conduct civil timber structures construction tasks • provision of clear and timely instruction and supervision by the individual of those involved in civil timber structures construction tasks • evidence of the consistent successful supervision of civil timber structures construction tasks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct civil timber structures construction tasks
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of civil timber structures construction tasks

Guidance information for	Consult the SkillsDMC User Guide for further

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assessment	information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks

Civil timber structures may include:	• bridges • jetties and wharves • retaining walls • noise barriers

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Civil timber structures construction tasks may include:	• site preparation methods • site set up methods • timber erection methods • temporary bracing methods • shimming methods • fastening methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety (OHS) requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations

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	who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Civil Structure (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICSG404A Apply the principles of civil masonry, crib and gabion structure construction

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of civil masonry, crib and gabion structure construction tasks in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of civil masonry, crib and gabion structure construction tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for civil masonry, crib and gabion structure construction tasks within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***civil masonry***, ***crib and gabion structure construction tasks*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** civil masonry, crib and gabion structure construction task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise civil masonry, crib and gabion structure construction tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - tonnage required
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret civil masonry, crib and gabion structure construction materials properties

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and test results

- provide recommendations for the improvement of the safe, effective and efficient execution of civil masonry, crib and gabion structure construction tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise civil masonry, crib and gabion structure construction tasks:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- excavation shoring requirements and procedures
- slope management requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- civil masonry, crib and gabion structure construction plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of civil masonry, crib and gabion structure construction tasks
- civil masonry, crib and gabion structure construction task resource requirements and procedures
- activities scheduling requirements and procedures
- civil masonry, crib and gabion structure construction materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- civil masonry, crib and gabion structure construction monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing

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- civil masonry, crib and gabion structure construction and related activities' terminology
- set out requirements and procedures
- drainage requirements
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of civil masonry, crib and gabion structure construction tasks • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of civil masonry, crib and gabion structure construction tasks • working with others to plan, prepare and conduct civil masonry, crib and gabion structure construction tasks • provision of clear and timely instruction and supervision by the individual of those involved in civil masonry, crib and gabion structure construction tasks • evidence of the consistent successful supervision of civil masonry, crib and gabion structure construction tasks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct civil masonry, crib and gabion structure construction tasks
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of civil masonry, crib and gabion structure construction tasks

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks

Civil masonry, **crib and gabion structures** may include:	• masonry walls and terraces • crib walls and terraces • gabion walls and terraces • causeways and fords

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Civil masonry, **crib and gabion structure construction tasks** may include:	• site preparation methods • site set out methods • extraction methods • load and haulage methods • excavation shoring methods • slope management methods • masonry, crib and gabion erection methods • temporary bracing methods • backfill methods • compaction and water application methods • surface finishing methods • line, grade and level control methods • sediment control methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety(OHS) requirements • excavation shoring requirements • slope management requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders

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	• toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Civil Structure (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICSG405A Carry out inspections of civil structures

Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of inspections of civil structures in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of inspections of civil structures are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is limited to the carrying out of maintenance and general condition inspections and does not include detailed structural inspections.
This unit is appropriate for those working in a supervisory role or as a technical specialist, to carrying out of inspections of civil structures within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***inspections of civil structures*** 1.3. Ensure a ***job plan***, is available which makes best use of the available resources and meets the civil structures inspection task requirements
2. Ensure initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the civil structures inspections task 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the inspections of civil structures
3. Oversee the execution of tasks	3.1. ***Monitor*** civil structures inspection task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to civil structure inspection practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to carry out of inspections of civil structures:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret civil structures materials properties and test results
- provide recommendations for the improvement of the safe, effective and efficient

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execution of inspections of civil structures
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to carry out of inspections of civil structures: • risk assessment and management requirement and procedures • statutory compliance requirements and procedures • occupational health and safety requirements and procedures • environmental management requirements and procedures • quality management requirements and procedures • work zone traffic management requirements and procedures • contract management requirements and procedures • communication requirements and procedures • administrative requirements and procedures • civil structures inspection plant and equipment capabilities and application • plant, equipment and tools maintenance requirements and procedures • operational techniques for the execution of inspections of civil structures • civil structures inspection resource requirements and procedures • activities scheduling requirements and procedures • civil structures inspection materials delivery requirements and procedures • job plan drafting of and administration requirements and procedures • reporting requirements and procedures • workplace relationship requirements and procedures • organisational, client and site operational requirements • relationship between various areas of civil works • team leadership techniques • works planning techniques • civil structures inspection monitoring methods • engineering survey principles • materials quality and delivery requirements and procedures • mentoring techniques • estimating principles • civil works construction sequencing • civil structures inspection and related activities' terminology • set out requirements and procedures • works planning techniques • monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the carrying out of inspections of civil structures • implementation of appropriate procedures and techniques for the safe, effective and efficient carrying out of inspections of civil structures • working with others to plan, prepare and conduct inspections of civil structures • provision of clear and timely instruction and supervision by the individual of those involved in inspections of civil structures • evidence of the consistent successful carrying out of inspections of civil structures
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct inspections of civil structures
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of inspections of civil structures

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Civil structures may include:	• civil concrete structures, including: • bridges, including their:

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	• foundations
	• abutments
	• piers
	• beams
	• decks
	• pre-cast and in-situ elements
	• normally reinforced and pre-stressed elements
	  • retaining walls
	  • water storage tanks and small dams
	  • noise barriers
	  • culverts
	  • safety barriers
	• civil steel structures, including:
	  • bridges
	  • sign gantries
	  • vertical sign supports
	  • noise barrier supports
	  • guardrails
	• civil timber structures, including:
	  • bridges, jetties and wharves
	  • retaining walls
	  • noise barriers
	• civil masonry, crib and gabion structures, including:
	  • masonry walls
	  • crib walls
	  • gabion walls
	  • foundations for these walls

Inspections of civil structures may include:	• site preparation methods • traffic control • safety measures • inspection methods • defect marking procedures • civil structure inspection recording methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements

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	• activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety (OHS) requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• civil structures report requirements • inspection cost requirements

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	• identification of concrete structures and elements problems, such as:
	  • cracks
	  • delamination
	  • displacement
	  • water where it should not be
	  • rust stains and
	  • lime leaching
	• identification of steel structures and elements problems, such as:
	  • deflection
	  • corrosion
	  • cracking
	  • damaged protective coating
	  • missing, damaged or loose fastenings
	• Identification of timber structures and elements problems, such as:
	  • deflection
	  • cracking
	  • rotting
	  • lamination
	  • moisture
	  • pest attack
	  • missing, damaged or loose fastenings
	• identification of masonry, crib or gabion structures and elements problems, such as:
	  • settling
	  • cracking
	  • missing mortar
	  • efflorescence
	• weephole condition

Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Civil Structure (General)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICSG406A Apply principles of maintenance of civil structures

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of civil structures maintenance tasks in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of civil structures maintenance tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for civil structures maintenance tasks within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***civil structures maintenance tasks*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** civil structures maintenance task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise civil structures maintenance tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret civil structures maintenance materials properties and test results
- provide recommendations for the improvement of the safe, effective and efficient

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execution of civil structures maintenance tasks
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to \ supervise civil structures maintenance tasks: • risk assessment and management requirement and procedures • statutory compliance requirements and procedures • occupational health and safety requirements and procedures • excavation shoring requirements and procedures • slope management requirements and procedures • environmental management requirements and procedures • quality management requirements and procedures • work zone traffic management requirements and procedures • contract management requirements and procedures • communication requirements and procedures • administrative requirements and procedures • civil structures maintenance plant and equipment capabilities and application • plant, equipment and tools maintenance requirements and procedures • operational techniques for the execution of civil structures maintenance tasks • civil structures maintenance task resource requirements and procedures • activities scheduling requirements and procedures • civil structures maintenance materials delivery requirements and procedures • job plan drafting of and administration requirements and procedures • reporting requirements and procedures • workplace relationship requirements and procedures • organisational, client and site operational requirements • relationship between various areas of civil works • team leadership techniques • works planning techniques • civil structures maintenance monitoring methods • engineering survey principles • materials quality and delivery requirements and procedures • mentoring techniques • estimating principles • civil works construction sequencing • civil structures maintenance and related activities terminology • set out requirements and procedures • pavement drainage requirements • works planning techniques • monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of civil structures maintenance tasks • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of civil structures maintenance tasks • working with others to plan, prepare and conduct civil structures maintenance tasks • provision of clear and timely instruction and supervision by the individual of those involved in civil structures maintenance tasks • evidence of the consistent successful supervision of civil structures maintenance tasks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct civil structures maintenance tasks
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of civil structures maintenance tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Civil structures may include:	• the following concrete structures: • bridges

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	• jetties and wharves • retaining walls • water storage tanks and small dams • noise barriers • culverts • safety barriers • foundations • the following steel structures: • bridges • jetties and wharves • sign gantries • vertical sign supports • noise barrier supports • guardrails • the following timber structures: • bridges • jetties and wharves • retaining walls • noise barrier • the following masonry, crib and gabion structures: • masonry walls • crib walls • gabion walls
Civil structures maintenance tasks may include:	• confirmation of the condition of the structure through inspection and testing • work should include, where applicable: • cleaning • refurbishing • replacement • painting
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements

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	• occupational health and safety (OHS) requirements • excavation shoring requirements • slope management requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements

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	• activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Civil Structure (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTB201A Maintain timber bridges

Modification History

Not applicable.

Unit Descriptor

This unit covers the maintenance of timber bridges in the civil construction industry. It includes planning and preparing, maintaining bridges, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***materials*** appropriate to the work application, safely handle and locate ready for use 1.7. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Maintain bridge	2.1. Obtain and apply schedule of ***maintenance*** repairs/***work order or instructions*** to organisational requirements 2.2. Locate access devices in reach of the areas to be maintained/repaired and check for safe operation 2.3. Locate defect or fault and prepare area for rectification 2.4. Select resources in accordance with the task 2.5. Report other defects or faults further identified during maintenance 2.6. Complete bridge maintenance work to specifications or instructions
3. Clean up	3.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 3.2. Clean, check, maintain and store plant,

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	tools and equipment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to maintain timber bridges:

- apply legislative, organisation and site requirements and procedures for maintaining timber bridges
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to maintain timber bridges:

- site and equipment safety requirements
- timber bridge maintenance procedures and techniques
- scaffolding
- preservatives and paints
- timber grading
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for maintaining timber bridges • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of timber bridge maintenance • working with others to undertake and complete the maintenance of timber bridges that meets all of the required outcomes • consistent timely completion of timber bridge maintenance that safely, effectively and efficiently meets the required outcomes • replacement of at least one length of sheeting/decking, a minimum of two metres in length and all associated activities, to specifications • replacement and painting of at least one fence/barrier post and at least six metres of railing to specification
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the maintenance of timber bridges

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings,

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	structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
Site may include:	• any ground conditions in urban and rural areas • timber bridges and may include timber wharves, piers and jetties
Signage requirements may include:	• highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • pedestrian areas
Tools and equipment may include:	• generators • power leads • electric drills • drills • augers • impact wrenches • oxy-acetylene equipment • chainsaws • power saws • paint brushes • brooms • crow bars • hammers • podger hammers • bolt extraction equipment • chisels • reaming bits • drifts
Materials may include:	• bolts • nuts • washers • paint • nails

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	• waterproof sealants • petroleum jelly • post straps • sheet materials • fence posts
Environmental protection requirements may include:	• waste management • stormwater protection • noise • dust • vibration • safe use of preservatives • waterway protection • clean-up management
Maintenance may include:	• touch up painting • bolt tightening • replacement of sheeting/decking • replacement/repair of fences/barriers • cleaning • weed control • hazard reduction • flashing repair and replacement • waterway cleaning • bolt replacement • replacement of traffic control devices and signs • replace kerbing • replace whacking planks/ballast boards • upgrading of applied preservatives
Work orders or instructions may include:	• checklists • emails • written instructions • drawings/sketches • verbal instructions

Unit Sector(s)

Timber Bridge Construction and Maintenance

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTB202A Apply bridge durability treatment

Modification History

Not applicable.

Unit Descriptor

This unit covers the application of bridge durability treatment in the civil construction industry. It includes planning and preparing, applying protective coatings and preservatives, installing flashing/capping, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions***, including plans, specifications, quality requirements and operational details 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***materials*** appropriate to the work application, safely handle and locate ready for use 1.7. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Apply protective coatings and preservatives	2.1. Locate ***access devices*** in reach of areas to be coated with ***protective coatings*** and ***preservatives*** and check for safe operation 2.2. Select resources in accordance with the task 2.3. Select and apply ***surface preparation*** technique 2.4. ***Apply protective coating/preservatives*** to the prepared area
3. Install flashing/capping	3.1. Locate access devices in reach of areas to be flashed/capped and check for safe operation 3.2. Select resources, materials and equipment in accordance with the task 3.3. Prepare flashing/capping materials for installation 3.4. Apply protective coating to the surfaces to

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	be flashed/capped 3.5. ***Fix flashing/capping*** to all specified timber members
4. Clean up	4.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 4.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to apply bridge durability treatment:

- apply legislative, organisation and site requirements and procedures for the application of bridge durability treatment
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to apply bridge durability treatment:

- site and equipment safety requirements
- timber bridge durability treatment procedures and techniques
- scaffolding
- preservatives and protective coatings
- termite barriers
- waterproofing
- timber deterioration
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying bridge durability treatment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of bridge durability treatment • working with others to undertake and complete the application of bridge durability treatment that meets all of the required outcomes • consistent timely completion of bridge durability treatment that safely, effectively and efficiently meets the required outcomes • application of protective coating to all surfaces of a bridge member of at least three metres in length • application of preservatives to the end of three cut timber members and the top surface of a timber member • preparation, making and installation of a capping on the end of a timber member
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical

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	resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application of bridge durability treatment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian Standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may include:	• Checklists • Emails • written instructions • drawings/sketches • verbal instructions
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working

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	in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• timber bridges and may include timber wharves, piers and jetties
Signage requirements may include:	• highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• generators • power leads • compressors • electric drills • drills • augers • paint brushes • rollers • abrasive blasting equipment, angle grinders • hammers • wire brushes • spatulas • ladders • scaffolding • elevated work platforms • cranes • boats or water platforms • spray equipment • trowels
Materials may include:	• protective coatings • preservatives • flashing/capping • proprietary termite barriers

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Environmental protection requirements may include:	• waste management • stormwater protection • noise • dust • vibration • safe use of preservatives • waterway protection • clean-up management
Access devices may include:	• scaffolding • cranes • elevated work platforms • backhoes • underbridge inspection units
Protective coatings may include:	• conventional, external acrylic and water based paints • zinc primers • galvanising
Preservatives may include:	• copper naphthenes • liquid preservatives • diffusing rods
Surface preparation may include:	• abrasive blasting • wire brushing • manual or electric sanding and grinding
Apply protective coating/preservatives may include:	• paint brushes • rollers • trowelling • spraying
Fix flashing/capping may include:	• measuring • cutting to length • air circulation spacing • shaping • grinding • filing • sealing • drilling and installation of fixings • fall to drainage point

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Unit Sector(s)

Timber Bridge Construction and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTB203A Produce drawings and sketches

Modification History

Not applicable.

Unit Descriptor

This unit covers the production of drawings and sketches in the civil construction industry. It includes collating information for drawings, creating simple sketches, orthographic drawings and sectional views, and developing specifications. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Collate information for drawings	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify and adhere to quality requirements of the organisational operations 1.4. Select tools and equipment to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Select drawing type from a range of ***drawings*** to suit job requirements 1.6. Identify ***key features***, site dimensions and ***orientation***, structures, ***services*** and features for inclusion in drawings
2. Create simple sketches, orthographic drawings and sectional views	2.1. Select ***drawing medium*** to suit job requirements 2.2. Prepare simple two dimensional drawings and sketches using standard drawing conventions 2.3. Prepare simple three dimensional drawings and sketches using standard drawing conventions 2.4. Prepare sectional details of simple structural elements and elevations using standard drawing conventions 2.5. Include common symbols and abbreviations using correct format and conventions 2.6. Prepare title panels to enable verification that drawing used is the latest version
3. Develop specifications	3.1. Identify purpose of ***specifications*** as they relate to bridge drawings 3.2. Identify elements as suitable for use in specifications 3.3. Draft specification for a bridge project using correct format and conventions

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to produce drawings and sketches:

- apply legislative, organisation and site requirements and procedures for producing drawings and sketches
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to produce drawings and sketches:

- site and equipment safety requirements
- timber bridge durability treatment procedures and techniques
- scaffolding
- preservatives and protective coatings
- termite barriers
- waterproofing
- timber deterioration
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for producing drawings and sketches • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of drawings and sketches • working with others to undertake and complete the production of drawings and sketches that meets all of the required outcomes • consistent timely completion of drawing and sketches that safely, effectively and efficiently meets the required outcomes • production of at least two sketches, one orthographic drawing and one sectional view drawing, one elevation, plan and end view for a minimum of three projects in compliance with standard drawing conventions
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the production of drawings and sketches

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements are to be in accordance with state or territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
Drawings may include:	• sketches • orthographic drawings and sectional view drawings • site plans • bridge plans • cross sectional plans/elevations • plan views • perspective views • isometric views • longitudinal plans • structural detail and specification providing illustrations and dimensions and project plans • specifications • illustrations • dimensions • notes

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Key features may include:	• shape of site • proposed structure(s) • roads • easements • existing structures • services • dimensions • types of structure • shape of structure • type of construction • layout • service requirements • location of plant and machinery • vertical and horizontal measurements
Orientation may include:	• relationship to the north compass point • location of roads • relationship to neighbouring properties
Services may include:	• drainage • sewerage • gas • telephone and cable • water • electricity
Drawing medium may include:	• pencil • pen and ink • computer aided drafting • graph paper • cartridge paper • tracing paper
Specifications may include:	• details relating to materials and quality of work • quality assurance • nominated sub-contractors • provision of site access/facilities • details relating to performance including standards of work, tolerances, material types, characteristics, treatments and finishes

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Unit Sector(s)

Timber Bridge Construction and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTB301A Undertake visual inspection

Modification History

Not applicable.

Unit Descriptor

This unit covers the undertaking of visual inspections in the civil construction industry. It includes planning and preparing, inspecting bridges, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project ***traffic*** management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or ***report*** any faults 1.6. Identify material appropriate to the work application, safely handle and locate ready for use 1.7. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Inspect bridge	2.1. Locate access devices in reach of areas for ***inspection*** and check for safe operation 2.2. Asses ***defects***, ***faults***, ***damage and deterioration*** by walking over, under and around the bridge 2.3. Observe bridge under the passage of vehicles to assess faults and deterioration 2.4. Report condition of bridge stating findings and methods of correction
3. Clean up	3.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 3.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to undertake visual inspection:

- apply legislative, organisation and site requirements and procedures for undertaking visual inspection
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to undertake visual inspection:

- site and equipment safety requirements
- timber bridge visual inspection procedures and techniques
- defects, faults, damage and deterioration types, causes and rectification methods
- structural principles of timber bridges
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for undertaking visual inspection • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of visual inspections • working with others to undertake and complete visual inspections that meet all of the required outcomes • consistent timely completion of undertaking visual inspections that safely, effectively and efficiently meet the required outcomes • inspection of one pre-inspected bridge, including walk over, under, around and under heavy load, providing a written report on findings and proposed rectification methods
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete visual inspections

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings,

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	structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• any ground conditions in urban and rural areas • timber bridges and may include timber wharves, piers and jetties
Signage requirements may include:	• highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • pedestrian areas
Tools and equipment may include:	• elevated work platforms • ladders • binoculars • digital cameras • hammers
Report faults and conditions may include:	• identification and location of the defect • damage • deterioration • photographing the defective area
Environmental protection requirements may include:	• waste management • stormwater protection • noise • dust • vibration • safe use of preservatives • waterway protection • clean-up management
Inspection may include:	• walking over • walking under • walking around under heavy traffic • drive over inspections
Defects, **faults**, **damage and**	• settlement

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deterioration may include:	• rotation of abutments and wing-alls • excessive deflection • misfitted members • dislodged members • rot • cracked metal fittings • corrosion • crushing • shakes • splitting • check • wane • pest attack • damage caused by accidents • missing delineators • flaking paint • missing components • loose components • scour or fire damage

Unit Sector(s)

Timber Bridge Construction and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTB302A Install temporary support members

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of temporary support members in the civil construction industry. It includes planning and preparing, installing temporary foundations, bed-logs and shoring systems, installing temporary members, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***materials*** appropriate to the work application, and ensure they are safely handled and located ready for use 1.6. Identify ***environmental protection requirements*** from the project environmental management plan
2. Install temporary foundations, bed-logs and shoring systems	2.1. ***Excavate foundation*** installation site 2.2. Install bed-log or *concrete footing* 2.3. Install ***shoring system*** or prepare timbers 2.4. Install jacks or proprietary shoring systems to ***restore the bridge***/***deck level*** 2.5. Install ***braces*** for stability during corrective work 2.6. Install custom designed support brackets or piles
3. Install temporary members	3.1. Install fasteners to specification 3.2. Install girders/stringers to specification 3.3. Install ***supplementary members*** to specification
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with state or territory legislation 4.2. Clean, check, maintain and store machinery, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install temporary support members:

- apply legislative, organisation and site requirements and procedures for installation of temporary support members
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install temporary support members:

- site and equipment safety requirements
- temporary support member installation procedures and techniques
- pier stability and foundations
- connection behaviour
- shoring and jacking systems
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installation of temporary support members • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installation of temporary support members • working with others to undertake and complete the installation of temporary support members that meets all of the required outcomes • consistent timely completion of the installation of temporary support members that safely, effectively and efficiently meets the required outcomes • installation of one temporary pier at least three metres high, including a bed-log and a jacking system • installation of at least one temporary girder and fastening to one timber member
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of temporary support members

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
Site may include:	• any ground conditions in urban and rural areas
Signage may include:	• highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • pedestrian areas, • load limits • temporary closures
Tools and equipment may include:	• generators/compressors • power leads • drills • impact wrenches • shifting spanners • jacks • proprietary tools • pinch bars • crow bars • mattocks • shovels • sledge hammers • chainsaws • wedges • cranes • back hoes • rollers
Materials may include:	• bolts • nuts and washers • steel plate
Environmental protection requirements may include:	• waste management • stormwater protection • noise • dust

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	• vibration • safe use of preservatives • waterway protection • clean-up management
Excavate foundation may include:	• assessing ground for load bearing capacity and shoring capability
Concrete footing is to be:	• in accordance with specifications and form part of the foundation
Shoring system may include:	• toms • props • piers
Restore the bridge/deck level occurs:	• to retain the load during replacement of temporary members
Braces are:	• custom designed to rectify a specific fault
Supplementary members may include:	• proprietary shoring systems • girders • beams

Unit Sector(s)

Timber Bridge Construction and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTB303A Erect a temporary modular support system (bailey) on an existing bridge

Modification History

Not applicable.

Unit Descriptor

This unit covers the erection of a temporary modular support system (bailey) on an existing bridge in the civil construction industry. It includes planning and preparing, setting out and establishing the support system, assembling a temporary modular bridge, disassembling a temporary modular bridge, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify materials appropriate to the work application, and ensure they are safely handled and located ready for use 1.6. Identify ***environmental protection requirements*** from the project environmental management plan
2. Set out establish support system	2.1. Assess load bearing capacity of the ground and/or timber directly under the support system 2.2. Set out bearing locations according to design specifications 2.3. Install supplementary supports according to design specifications
3. Assemble temporary modular bridge	3.1. ***Assess condition of components*** for acceptable use and replace faulty parts 3.2. Compile components and check inventory 3.3. Mark location points for high capacity panelling 3.4. Select resources, materials and equipment in accordance with the task 3.5. ***Sequence*** assembly process prior to commencement 3.6. Assemble ***interlocking components using connections and fittings*** for the ***temporary modular bridge*** 3.7. ***Re-check*** completed assembly
4. Disassemble temporary	4.1. Sequence disassembly process prior to

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modular bridge	commencement 4.2. Select resources, materials and equipment in accordance with the task 4.3. Disassemble interlocking components including connections and fittings 4.4. Compile components and check inventory 4.5. Assemble condition of components for acceptable reuse 4.6. Store components according to organisational requirements
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with state or territory legislation 5.2. Clean, check, maintain and store machinery, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to erect a temporary modular support system (bailey) on an existing bridge:

- apply legislative, organisation and site requirements and procedures for erection of a temporary modular support system (bailey) on an existing bridge
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to erect a temporary modular support system (bailey) on an existing bridge:

- site and equipment safety requirements
- temporary modular bridge support system erection procedures and techniques
- construction efficiencies and sequencing
- defective components and parts
- traffic conditions, control and temporary kerbs
- load bearing capacity of temporary modular bridge support systems
- load transfer from truss to bailey
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for erecting a temporary modular support system (bailey) on an existing bridge • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the erection of a temporary modular support system (bailey) on an existing bridge • working with others to undertake and complete the erection of a temporary modular support system (bailey) on an existing bridge that meets all of the required outcomes • consistent timely completion of the erection of a temporary modular support system (bailey) on an existing bridge that safely, effectively and efficiently meets the required outcomes • construct one temporary modular support system (Bailey) on an existing bridge to design specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the erection of a temporary modular support system (bailey) on an existing bridge

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings,

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	structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation

Site may include:	• any ground conditions in urban and rural areas
	• preparation including:
	  • foundation levelling
	  • set up of bed logs
	  • storage and security of components

Signage may include:	• highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • pedestrian areas, • load limits • temporary closures
Tools and equipment may include:	• sledge hammers • shifting spanners • ratchet sockets • bailey tools, • jacks • proprietary tools • pinch bars • crow bars • claw hammers • cranes • trucks
Environmental protection requirements may include:	• waste management • stormwater protection • noise • dust • vibration • safe use of preservatives • waterway protection

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	• clean-up management
Assess condition of components may include:	• discarding items due to rust, damage or deterioration
Sequence is:	• completed efficiently and in a cyclical methodology of the parts
Interlocking components using connections and fittings may include:	• panels • end posts • reinforcing cords • bracing frames • yolks • hanger bars or rods • distribution beams • locking pins • split pins • bracing nuts • bolts
Temporary modular bridge support system erection:	• is a team situation and may include working in conjunction with a dogman • is also referred to as Bailey bridging
Re-check refers to:	• a visual inspection to ensure work has occurred in the correct sequence and to specifications

Unit Sector(s)

Timber Bridge Construction and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTB304A Install or replace sub-structure members

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation or replacement of sub-structure members in the civil construction industry. It includes planning and preparing, preparing for installation or replacement, erecting major sub-structure members, erecting minor sub-structure members, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***materials*** appropriate to the work application, and ensure they are safely handled and located ready for use 1.6. Identify ***environmental protection requirements*** from the project environmental management plan
2. Prepare for installation or replacement	2.1. Assess implications of project on bridge load capacity 2.2. Measure dimensions of original components 2.3. Select resources in accordance with the task 2.4. Conduct follow up inspection of work
3. Erect major sub-structure members	3.1. Measure and prepare members for installation or replacement of ***major sub-structure members*** 3.2. Fit new members in accordance with the specifications 3.3. Apply durability treatments to the new members 3.4. Install ***connectors*** to the new sub-structure members 3.5. ***Remove temporary supports*** after new members are secured in place
4. Erect minor sub-structure member	4.1. Measure and prepare members for installation or replacement of ***minor sub-structure members***

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	4.2. Fit new members in accordance with the specifications 4.3. Apply ***durability treatments*** to the new members 4.4. Install connectors to the new sub-structure members
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with state or territory legislation 5.2. Clean, check, maintain and store machinery, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install or replace sub-structure members:

- apply legislative, organisation and site requirements and procedures for installation or replacement of sub-structure members
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install or replace sub-structure members:

- site and equipment safety requirements
- temporary support member installation procedures and techniques
- pier stability and foundations
- connection behaviour
- shoring and jacking systems
- test boring
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installation or replacement of sub-structure members • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installation or replacement of sub-structure members • working with others to undertake and complete the installation or replacement of sub-structure members that meets all of the required outcomes • consistent timely completion of installation or replacement of sub-structure members that safely, effectively and efficiently meets the required outcomes • completion of the planning, preparation and erection of at least one major sub-structure member and one minor sub-structure member to design specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation or replacement of sub-structure members

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• any ground conditions in urban and rural areas
Signage may include:	• highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • pedestrian areas, • load limits • temporary closures
Tools and equipment may include:	• generators/compressors • power leads • drills • impact wrenches • electric planes • sledge hammers • claw hammers • shifting spanners • jacks • proprietary tools • pinch bars • crow bars • mattocks • shovels • chainsaws • wedges • oxy-acetylene equipment • cranes • back hoes • rollers
Materials may include:	• bolts • nuts • washers • steel plate

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Environmental protection requirements may include:	• waste management • stormwater protection • noise • dust • vibration • safe use of preservatives • waterway protection • clean-up management
Major sub-structure members may include:	• headstocks • sills • abutments
Connectors may include:	• bolts • brackets • tang bolts • splicing plates
Remove temporary supports includes:	• removing jacks or support systems to transfer weight back to bridge members and assess the bedding in procedure
Minor sub-structure members may include:	• braces • wales • wing walls
Durability treatments may include:	• conventional, external acrylic and water based paints • zinc primers • galvanising • copper naphthenes • liquid preservatives • diffusing rods

Unit Sector(s)

Timber Bridge Construction and Maintenance

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICTB305A Install or replace super-structure members

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation or replacement of super-structure members in the civil construction industry. It includes planning and preparing, installing temporary supports, installing or replacing members, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***materials*** appropriate to the work application, and ensure they are safely handled and located ready for use 1.6. Identify ***environmental protection requirements*** from the project environmental management plan
2. Install temporary supports	2.1. Locate and level bed logs in place 2.2. Bolt ***temporary*** headers to the girders 2.3. Position toms and jacks on the bed logs 2.4. Install temporary bracing 2.5. Loosen or cut existing bolts to allow movement and access 2.6. Jack structure to allow removal of defective part
3. Install or replace members	3.1. Remove defective part avoiding damage to surrounding members and other workers 3.2. Measure and prepare members for ***installation or replacement*** 3.3. Fit new members in accordance with the specifications 3.4. Apply ***durability treatments*** to the new members 3.5. Install ***connectors*** to the new ***super-structure members*** 3.6. ***Remove temporary supports*** after new members are secured in place 3.7. Remove temporary headers and bed logs

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	and return bridge to its normal settle point
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with state or territory legislation 4.2. Clean, check, maintain and store machinery, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install or replace super-structure members:

- apply legislative, organisation and site requirements and procedures for installation or replacement of super-structure members
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install or replace super-structure members:

- site and equipment safety requirements
- temporary support member installation procedures and techniques
- connection behaviour
- shoring and jacking systems
- timber grading
- test boring
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installation or replacement of super-structure members • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installation or replacement of super-structure members • working with others to undertake and complete the installation or replacement of super-structure members that meets all of the required outcomes • consistent timely completion of the installation or replacement of super-structure members that safely, effectively and efficiently meets the required outcomes • selection and preparation of the timber, application of preservatives, marking out and cutting to size of at least one corbel or girder for a super-structure in accordance with specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment.

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	Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation or replacement of super-structure members

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• any ground conditions in urban and rural areas
Signage may include:	• highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • pedestrian areas, • load limits • temporary closures
Tools and equipment may include:	• generators/compressors • power leads • drills • impact wrenches • electric planes • sledge hammers • claw hammers • shifting spanners • jacks • proprietary tools • pinch bars • crow bars • mattocks • shovels • chainsaws • wedges • oxy-acetylene equipment • cranes • back hoes • rollers
Materials may include:	• bolts • nuts • washers • steel plate

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Environmental protection requirements may include:	• waste management • stormwater protection • noise • dust • vibration • safe use of preservatives • waterway protection • clean-up management
Temporary supports may include:	• bed logs • headers • toms and jacks • bracing • jacks • chains
Installation or replacement is to include:	• the dressing and cutting of timber
Durability treatments may include:	• conventional, external acrylic and water based paints • zinc primers • galvanising • copper naphthenes • liquid preservatives • diffusing rods
Connectors may include:	• bolts • brackets • tang bolts • splicing plates
Super-structure members may include:	• corbels • transverse • cross-girders • stringers • girders • barriers • decking/sheeting • kerbing • whacking planks • handrails
Remove temporary supports includes:	• removing jacks or support systems to transfer weight back to bridge members and assess the bedding in procedure

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Unit Sector(s)

Timber Bridge Construction and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTB306A Splice and connect timber members

Modification History

Not applicable.

Unit Descriptor

This unit covers the splicing and connection of timber members in the civil construction industry. It includes planning and preparing, installing temporary supports, splicing and connecting, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***materials*** appropriate to the work application, and ensure they are safely handled and located ready for use 1.6. Identify ***environmental protection requirements*** from the project environmental management plan
2. Install temporary supports	2.1. Locate and level bed logs in place 2.2. Install temporary header 2.3. Position toms and jacks on the bed logs 2.4. Install temporary bracing 2.5. Loosen or cut ***connectors*** to piles to allow movement and access 2.6. Jack ***bridge structure*** clear of pile
3. Splice and connect	3.1. Select and measure ***timber*** components 3.2. ***Face*** timber members in readiness for joining 3.3. Apply ***durability treatments*** to the members 3.4. Apply preservatives to the faced sections 3.5. Fit ***splicing*** plate according to specifications 3.6. Install connectors to the members 3.7. ***Remove temporary supports*** after members are secured in place
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with state or

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	territory legislation 4.2. Clean, check, maintain and store machinery, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to splice and connect timber members:

- apply legislative, organisation and site requirements and procedures for splicing and connecting timber members
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to splice and connect timber members:

- site and equipment safety requirements
- temporary support member installation procedures and techniques
- connection behaviour
- shoring and jacking systems
- timber grading
- test boring
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for splicing and connecting timber members • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of splicing and connection of timber members • working with others to undertake and complete the splicing and connection of timber members that meets all of the required outcomes • consistent timely completion of splicing and connection of timber members that safely, effectively and efficiently meets the required outcomes • completion of the cutting and splicing of at least one pile or splicing of two top or bottom chords to specification using a chainsaw and splicing plates
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site

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	circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the splicing and connection of timber members

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• any ground conditions in urban and rural areas
Signage may include:	• highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • pedestrian areas, • load limits • temporary closures
Tools and equipment may include:	• generators/compressors • power leads • drills • impact wrenches • shifting spanners • chainsaws • axes • adzes • rattle guns • power/air tools • chisels • electric planes
Materials may include:	• bolts • nuts • washers • splice plates • shear keys • timber members • preservatives
Environmental protection requirements may include:	• waste management • stormwater protection • noise • dust • vibration

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	• safe use of preservatives • waterway protection • clean-up management
Connectors may include:	• shear keys • splice plates • bolts
Bridge structure may include:	• headstocks • capwales
Timber selection may include:	• grading • strength • species • durability
Face (or scarf) may include:	• removal of a section of timber (notching it out) • changing the round to a flat • using an axe, adze or chainsaw • for acceptance of the splicing plate
Durability treatments may include:	• conventional, external acrylic and water based paints • zinc primers • galvanising • copper naphthenes • liquid preservatives • diffusing rods
Splicing may include:	• piles • top cords • bottom cords • truss members • bracing
Remove temporary supports may include:	• removing jacks or support systems to transfer weight back to bridge members and assess the bedding in procedure

Unit Sector(s)

Timber Bridge Construction and Maintenance

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICTB307A Assemble a temporary modular bridge

Modification History

Not applicable.

Unit Descriptor

This unit covers the assembly of a temporary modular bridge in the civil construction industry. It includes planning and preparing, assembling temporary bridge components, launching a temporary bridge, disassembling temporary bridge components, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify materials appropriate to the work application, and ensure they are safely handled and located ready for use 1.6. Identify ***environmental protection requirements*** from the project environmental management plan
2. Assemble temporary bridge components	2.1. ***Assess condition of components*** for acceptable use and discard faulty parts 2.2. Compile components and check inventory 2.3. Mark location points for ***high capacity panelling*** 2.4. Select resources, materials and equipment in accordance with the task 2.5. ***Sequence*** assembly process prior to commencement 2.6. Assemble ***interlocking components*** using connections and fittings 2.7. ***Re-check completed assembly***
3. Launch temporary bridge	3.1. Set out starting approach site 3.2. Set out arrival approach site with the receiving bearing 3.3. Position ***temporary bridge*** on the starting approach 3.4. Fit ***launching nose***, inclined upwards, to the first module 3.5. Set up ***launching pad*** on the starting approach

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	3.6. Roll out temporary bridge by winching or pushing 3.7. ***Cantilever*** temporary bridge modules, calculated at an angle to achieve reaching the arrival ***approach***, and ***launch*** 3.8. Fit launching nose and end module to the receiving bearings at the arrival approach
4. Disassemble temporary bridge components	4.1. Sequence disassembly process prior to commencement 4.2. Select resources, materials and equipment in accordance with the task 4.3. Disassemble interlocking components including connections and fittings 4.4. Compile components and check inventory 4.5. Assemble condition of components for acceptable use and discard faulty parts 4.6. Store components according to organisational requirements
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with state or territory legislation 5.2. Clean, check, maintain and store machinery, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to assemble a temporary modular bridge:

- apply legislative, organisation and site requirements and procedures for assembly of a temporary modular bridge
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to assemble a temporary modular bridge:

- site and equipment safety requirements
- temporary modular bridge assembly procedures and techniques
- launching procedures and techniques
- construction efficiencies and sequencing
- defective components and parts
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assembly of a temporary modular bridge • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the assembly of a temporary modular bridge • working with others to undertake and complete the assembly of a temporary modular bridge that meets all of the required outcomes • consistent timely completion of the assembly of a temporary modular bridge that safely, effectively and efficiently meets the required outcomes • completion of the assembly and launching of a full temporary modular bridge including all components, connections and fittings, to specifications
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the assembly of a temporary modular bridge

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings,

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	structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation

Site may include:	• any ground conditions in urban and rural areas
	• preparation, including:
	  • foundation levelling
	  • set up of bed logs
	  • storage and security of components

Signage may include:	• highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • pedestrian areas, • load limits • temporary closures
Tools and equipment may include:	• sledge hammers • shifting spanners • ratchet sockets • bailey tools • winches • jacks • proprietary tools • pinch bars • crow bars • claw hammers • cranes • boats • trucks
Environmental protection requirements may include:	• waste management • stormwater protection • noise • dust • vibration

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	• safe use of preservatives • waterway protection • clean-up management
Assess condition of components may include:	• discarding items due to rust, damage or deterioration
Positioning of **high capacity*panelling*** correctly:	• is essential for temporary bridge safety and use
Sequence is completed:	• efficiently and in a cyclical methodology of the parts
Interlocking components may include:	• bearings • end posts • reinforcing cords • bracing frames • transoms • transom clips • wind braces • rakers • stringers • cord bolts • chesses • approach ramps • receiving bearings • launching nose • rollers • jacks • distribution beams
Re-check completed assembly refers to:	• a visual inspection to ensure work has occurred in the correct sequence and to specifications
Temporary bridge construction is:	• a team situation and may include working in conjunction with a dogman
Launching nose allows for:	• easy connection on to the receiving bearings
Launching pad may include:	• rollers and sway braces enabling the temporary modular bridge to be launched
Cantilever includes:	• launching the temporary modular bridge from one end at an angle which will prevent tip deflection and achieve reaching the arrival approach
Approach may include:	• the temporary road access leading to and from the temporary modular bridge location

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Launch refers to:	• the installation process which places the temporary modular bridge in position

Unit Sector(s)

Timber Bridge Construction and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTB308A Install or replace truss members

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation or replacement of truss members in the civil construction industry. It includes planning and preparing, producing and installing truss members, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***materials*** appropriate to the work application, and ensure they are safely handled and located ready for use 1.6. Identify ***environmental protection requirements*** from the project environmental management plan
2. Produce and install truss members	2.1. Remove defective ***truss members*** in accordance with engineering drawings 2.2. Measure truss members and prepare for installation or replacement 2.3. Fabricate new truss members to replicate or improve ***old truss members*** 2.4. Fit new truss members in accordance with the specifications 2.5. Apply ***durability treatments*** to the new truss members 2.6. Install ***connectors*** and flashing to the new truss members 2.7. Adjust king bolts and re-camber truss to achieve specified camber 2.8. Remove bailey supports after new truss members are secured in place
3. Clean up	3.1. Clear work area and dispose of or recycle materials in accordance with state or territory legislation 3.2. Clean, check, maintain and store machinery, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install or replace truss members:

- apply legislative, organisation and site requirements and procedures for installation or replacement of truss members
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install or replace truss members:

- site and equipment safety requirements
- bailey bridges and bailey support system installation procedures and techniques
- trusses and truss members
- timber grading and characteristics
- connection behaviour
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the installation or replacement of truss members • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installation or replacement of truss members • working with others to undertake and complete the installation or replacement of truss members that meets all of the required outcomes • consistent timely completion of the installation or replacement of truss members that safely, effectively and efficiently meets the required outcomes • completion of the removal of at least one old defective truss member, replace and install at least one new truss member and re-camber the truss
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular

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	worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation or replacement of truss members

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• any ground conditions in urban and rural areas
Signage may include:	• highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • pedestrian areas, • load limits • temporary closures
Tools and equipment may include:	• generators/compressors • power leads • drills • impact wrenches • shifting spanners • power saws, chisels • stillsons • cranes • trucks • chainsaws
Materials may include:	• king bolts/tie rods • nuts • washers • truss members • bailey system • shear connectors • steel shoes • flashing • preservatives
Environmental protection requirements may include:	• waste management • stormwater protection • noise • dust • vibration

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	• safe use of preservatives • waterway protection • clean-up management

Truss members may include:	• timber truss members including:
	  • top cords
	  • bottom cords
	  • principals
	  • compression members
	  • butting blocks
	• steel truss members including:
	  • shoes
	  • king bolts/tie rods
	  • steel bottom cords

Old truss members can be used as:	• a template for production of new members where it was the correct size, alternatively they are resized to accomplish the correct tension and camber
Durability treatments may include:	• conventional, external acrylic and water based paints • zinc primers • galvanising • copper naphthenes • liquid preservatives • diffusing rods
Connectors may be used to:	• connect top and bottom cords of trusses using splicing methods and splicing plates

Unit Sector(s)

Timber Bridge Construction and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTB309A Construct, maintain and remove coffer dams

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction, maintenance and removal of coffer dams in the civil construction industry. It includes planning and preparing, constructing and maintaining a dam, removing a coffer dam, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***materials*** appropriate to the work application, and ensure they are safely handled and located ready for use 1.6. Identify ***environmental protection requirements*** from the project environmental management plan
2. Construct and maintain a dam	2.1. Contact utilities to check placement of marine cables before ***coffer dam construction*** 2.2. Drive sheet piles into location in accordance with specifications 2.3. ***Brace*** sheet piles 2.4. ***Dewater*** and ***caulk*** dammed area 2.5. Install sump and/or pump to remove excess water seepage 2.6. Remove mud manually from dammed area 2.7. ***Level dammed area*** ready for bridge work to commence
3. Remove coffer dam	3.1. Clear dammed area of any refuse or construction waste 3.2. Remove temporary concrete slab, where used 3.3. Flood coffer dam 3.4. Remove sheet pile 3.5. Extract and dismantle sheet piling allowing waterway to restore its original flow

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4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with state or territory legislation 4.2. Clean, check, maintain and store machinery, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct, maintain and remove coffer dams:

- apply legislative, organisation and site requirements and procedures for construction, maintenance and removal of coffer dams
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to construct, maintain and remove coffer dams:

- site and equipment safety requirements
- boat and water safety
- sheet piling
- environmental protection act
- dewatering
- caulking
- dial before you dig
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for construction, maintenance and removal of coffer dams • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of construction, maintenance and removal of coffer dams • working with others to undertake and complete the construction, maintenance and removal of coffer dams that meets all of the required outcomes • consistent timely completion of the construction, maintenance and removal of coffer dams that safely, effectively and efficiently meets the required outcomes • construction, maintenance and removal of at least one coffer dam, with at least four sheet piles, large enough to require bracing
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site

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	circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction, maintenance and removal of coffer dams

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

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	• emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• any water or ground conditions in urban and rural areas where damming is to occur for the purposes of bridge construction or repair
Signage may include:	• boat navigation devices (including night navigation) • site safety signage • temporary signage for the benefit of boat operators and other waterway users
Traffic conditions may include:	• rivers • streams • trafficked waterways
Tools and equipment may include:	• sheet piling • boats • pneumatic hammers • pile drivers • sheet lifters • excavators/backhoes • shovels • sludge pumps • bracing • slings • chains • shackles • crane
Materials may include:	• caulking material • concrete
Environmental protection requirements may include:	• waste management • stormwater protection • noise • dust • vibration • safe use of preservatives • waterway protection • clean-up management
Coffer dam construction may include:	• sheet pile construction • sandbags, timber or proprietary systems • construction conducted in conjunction with

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	plant operators and doggers
Brace may include:	• pipes • timber • jacks • adjustable props
Dewater refers to:	• the process of removing water and sludge from the sheeted off or dammed area using pumps and sumps (a pit excavated at the lowest point to collect excess water seepage)

Caulk may include:	• caulking of sheet piling joints using sealants including:
	  • bitumen
	  • concrete expansion strips
	  • impregnated fibre board
	  • rubber strips

Level dammed area may include:	• laying of a temporary concrete slab

Unit Sector(s)

Timber Bridge Construction and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTB310A Construct specialised timber deck systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction of specialised timber deck systems in the civil construction industry. It includes planning and preparing, constructing the bridge deck, installing the bridge deck, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***materials*** appropriate to the work application, and ensure they are safely handled and located ready for use 1.6. Identify ***environmental protection requirements*** from the project environmental management plan
2. Construct bridge deck	2.1. Construct ***timber bridge deck*** in accordance with the production plans 2.2. Select deck materials in accordance with specifications 2.3. Pre-drill connection points 2.4. Fix deck temporary with nails 2.5. Connect ***stressing cables*** to the bridge deck in accordance with specifications 2.6. Stress and rest bridge deck for the specified timeframe
3. Install bridge deck	3.1. Re-stress bridge deck prior to removal to location 3.2. Trim bridge deck prior to securing in location 3.3. ***Install*** bridge deck at location 3.4. Bolt bridge deck to the cross girders 3.5. Re-stress bridge deck 3.6. Pack stressing cable location holes with grease 3.7. Fit protection angles, ***kerbs*** and handrails 3.8. Apply ***waterproofing*** to the deck and

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	fittings
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with state or territory legislation 4.2. Clean, check, maintain and store machinery, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct specialised timber deck systems:

- apply legislative, organisation and site requirements and procedures for construction of specialised timber deck systems
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to construct specialised timber deck systems:

- site and equipment safety requirements
- boat and water safety
- sheet piling
- Environmental Protection Act
- dewatering
- caulking
- dial before you dig
- bridge foundations
- bridge heritage
- equipment types, characteristics, technical capabilities and limitations
- processes for the calculation of material requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- quality assurance systems and standards
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for constructing specialised timber deck systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of construction of specialised timber deck systems • working with others to undertake and complete the construction of specialised timber deck systems that meets all of the required outcomes • consistent timely completion of construction of specialised timber deck systems that safely, effectively and efficiently meets the required outcomes • construction and installation of at least one span of a specialised timber deck system, constructed of stressed laminated timber
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction of specialised timber deck systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site locations may include:	• any ground conditions in urban and rural areas
Signage may include:	• highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• generators/compressors • rattle guns • routers • drills • power saws • grease guns • impact wrenches • shifting spanners • chisels • slings • chains • shackles • cranes • stressing jacks • chainsaws
Materials may include:	• block washers • bolts • grease • bridge deck timbers • angle iron • stressing cable • rubberised sealer • sealants • waterproofing agents
Environmental protection	• waste management

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requirements may include:	• stormwater protection • noise • dust • vibration • safe use of preservatives • waterway protection • clean-up management
Timber bridge deck may include:	• timber bridge deck systems may be built off-site (may be near to the bridge) or in-situ and may include removal of the old deck • timber bridge decks are to include stress laminated timber bridge decks and may include timber concrete composite module decks, concrete overlay decks, fibre reinforced polymer decks and proprietary system decks
Stressing cables are to include:	• steel strands
Install may include:	• lifting in position with a crane and crane operator or rolling into position • installation conducted in conjunction with a dogman
Kerbs may include:	• the use of a rubberised sealer, fitted beneath the kerbing
Waterproofing may include:	• a bitumen membrane • metal seal • rubber • caps on end of stressing points

Unit Sector(s)

Timber Bridge Construction and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTC301A Install tunnelling constructions services

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of tunnelling construction services in the civil construction industry. It includes planning and preparing for tunnel construction services, installing ducting for air and ventilation, installing pipelines for construction services, installing road/rail access, maintaining services, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Install ducting for air and ventilation	2.1. Install pipeline for compressed air to design location and connect to compressor 2.2. Install pipeline for air supply to location and specifications 2.3. Install ventilation ducting to location and specifications
3. Install pipelines for construction services	3.1. Install pipelines for drainage and connect to pumping system 3.2. Install pipelines for water supply to relevant water authority requirements
4. Install road/rail access	4.1. Lay, spread and compact ***material*** to provide surface for vehicular access where required 4.2. Identify rail track construction from tunnel drawings and specifications 4.3. Lay and install rail track to specifications 4.4. Install warning and directional signage to designed locations
5. Maintain services	5.1. Maintain service ducting and pipelines to operational conditions 5.2. Maintain access facilities to safe working operational requirements 5.3. Inspect and maintain rail track

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6. Clean up	6.1. Clear work area and dispose or recycle materials in accordance with project environmental management plan 6.2. Plant, tools and equipment are cleaned, checked, maintained and stored

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install tunneling construction services:

- apply legislative, organisation and site requirements and procedures for installing tunnelling construction services
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install tunneling construction services:

- site and equipment safety requirements
- tunnel construction
- tunnel construction services
- construction principles
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing tunnelling construction services • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of tunnelling construction services installation • working with others to undertake and complete the installation of tunnelling construction services that meets all of the required outcomes • consistent timely completion of tunnelling construction services installation that safely, effectively and efficiently meets the required outcomes • installation of a minimum of 20 metres of ventilation, 20 metres of drainage and 20 metres of road/rail access for one project, to job specification
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site

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	circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of tunnelling construction services

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevantcompliance documentation may include:	• legislative, organisational and site requirements and procedures • site safety plan • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

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	• emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• hydraulic pipe jacks • shovels • compressors • generators
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Materials may include:	• reinforced concrete pipes • air ventilation • ducting • strip drainage • drainage conduit

Unit Sector(s)

Tunnel Construction

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTC302A Line tunnel

Modification History

Not applicable.

Unit Descriptor

This unit covers the lining of tunnels in the civil construction industry. It includes planning and preparing, preparing tunnel faces for concreting and shotcreting, lining and shotcreting tunnel faces, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Prepare tunnel face for concrete/shotcrete	2.1. Install rock anchors and/or bolts to designed locations in accordance with structural drawings and specifications/directions 2.2. Prepare reinforcing mesh in accordance with tunnel shape and designed ***lining***, where specified 2.3. Locate and secure reinforcing mesh in place 2.4. Fix dowles to wall face to provide depth gauge to thickness of ***concrete***/shotcrete according to engineer's specifications or directions 2.5. Install drainage to the tunnel roof and walls where specified
3. Line/shotcrete tunnel face	3.1. Set up pump, pipelines and spray equipment and check for serviceability and operation 3.2. Control mix in accordance to specifications and job requirements 3.3. Operate pump 3.4. Prepare formwork and set to specifications 3.5. Provide support to shotcreter in monitoring supply and assist with elevated platform

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	and allied equipment 3.6. Apply shotcrete consistently
4. Clean up	4.1. Clear work area and dispose of or recycle ***materials*** in accordance with environmental requirements 4.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to line tunnels:

- apply legislative, organisation and site requirements and procedures for lining tunnels
- interpret engineering drawings
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions
- report defects

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to line tunnels:

- site and equipment safety requirements
- tunnel construction
- tunnel lining
- construction principles
- materials used in tunnel lining
- scaffolding and work platform installation
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for lining tunnels • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of tunnel lining • working with others to undertake and complete the lining of tunnels that meets all of the required outcomes • consistent timely completion of tunnel lining that safely, effectively and efficiently meets the required outcomes • completion of drilling and installation of rock bolts, application of reinforcing mesh and shotcreting/concreting of a minimum of a five lineal metre section of tunnel
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the lining of tunnels

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• shotcreting machines • drill rigs • spanners and shotcrete pumps • concrete pumps • slick lines • formwork
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Lining may include:	• shotcreting • rock bolting • reinforced mesh • formwork • pre-cast concrete lining • concrete lining • applied shotcrete finishes • poured reinforced concrete • installation of pre-cast section
Concrete application may include the use of:	• concrete lining machine • slip or telescopic formwork • strip and re-assemble formwork • fold and re-assemble formwork

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Materials may include:	• dowels • rock bolts • drainage materials (strip drains, PVC pipe) • reinforced mesh

Unit Sector(s)

Tunnel Construction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTC303A Excavate tunnel by machine

Modification History

Not applicable.

Unit Descriptor

This unit covers the excavation of tunnels by machine in the civil construction industry. It includes planning and preparing, setting up for machine operations, excavating tunnels and controlling dust and water, controlling mucking, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Identify and assess ***ground*** conditions from engineers' survey analysis 1.5. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set up for machine operation	2.1. Devise and follow production schedules consistent with job requirements 2.2. Locate and set up machine and equipment in accordance with planned operating procedure 2.3. Adjust machine and attachments for terrain, rock and ground conditions where specified 2.4. Use controls to produce smooth and efficient operation of machine according to manufacturer's manual 2.5. Carry out operator maintenance and servicing of machine and equipment to regular schedule during ***excavation process***
3. Excavate tunnel and control dust and water	3.1. Excavate ***tunnel*** to shape required by specification according to laser/line levels and measurements 3.2. Incorporate dust suppression methods with machine cutting operations to control dust according to OHS requirements 3.3. Operate and maintain dust extraction systems to maximum efficiency during

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	excavation 3.4. Remove excess water by operating pumping or drainage system to maintain minimal surface water levels
4. Control mucking	4.1. Set up and align conveyor/mucking system to spoil system 4.2. Operate mucking attachments safely 4.3. Maintain dust extraction system in operation along conveyor or mucking system 4.4. Remove spoil in accordance with planned operating procedures 4.5. Direct trucks safely to and from mucking area
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to excavate tunnels by machine:

- apply legislative, organisation and site requirements and procedures for excavating tunnels by machine
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to excavate tunnels by machine:

- site and equipment safety requirements
- tunnel construction
- tunnel excavation
- construction principles
- soil and rock type characteristics
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for excavating tunnels by machine • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of tunnel excavation by machine • working with others to undertake and complete the excavation of tunnels by machine that meets all of the required outcomes • consistent timely completion of tunnel excavation by machine that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the excavation of tunnels by machine

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Ground conditions may include:	• rock • clay • sand
Tools and equipment may include:	• road header machines • tunnel boring machines (TBM) • shields • pipe jacking equipment
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Excavation process may include the use of:	• shields • earth pressure bearing shields • pipe jacking
Tunnel services may include:	• rail • road • communication • water • power

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Unit Sector(s)

Tunnel Construction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTC304A Muck out tunnel earthworks

Modification History

Not applicable.

Unit Descriptor

This unit covers the mucking out of tunnel earthworks in the civil construction industry. It includes planning and preparing, barring/scaling down loose material, removing spoils by hand, loading spoils by machine, removing spoils, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Bar/scale down loose material	2.1. Identify and position plant and equipment in accordance with job requirements 2.2. Bar/scale down loose material safely
3. Remove spoil by hand	3.1. Remove excavated ***muck*** and transport to spoil heap
4. Load spoil by machine	4.1. Install ***spoil haulage*** lines, rail and conveyor system to engineers' and/or manufacturer's specifications 4.2. Operate mucking machines 4.3. Inspect conveyors regularly and maintain to manufacturer's specification
5. Remove spoil	5.1. Operate hauling engine smoothly to manufacturer's specifications 5.2. Operate continuous conveyor system 5.3. Maintain dust controls throughout mucking process
6. Clean up	6.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to muck out tunnel earthworks:

- apply legislative, organisation and site requirements and procedures for mucking out tunnel earthworks
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to muck out tunnel earthworks:

- site and equipment safety requirements
- tunnel construction
- tunnel mucking out
- construction principles
- soil and rock type characteristics
- scaffolding and work platform installation
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for mucking out tunnel earthworks • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of mucking out tunnel earthworks • working with others to undertake and complete the mucking out of tunnel earthworks that meets all of the required outcomes • consistent timely completion of mucking out tunnel earthworks that safely, effectively and efficiently meets the required outcomes • completion of mucking out tunnel earthworks to the required job specification including a minimum of ten cubic metres by machine
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the mucking out of tunnel earthworks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• shovels • wheelbarrows • muckers/boggers • skid steer loaders • front end loaders • face shovels
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Muck removal may be conducted by:	• machine • hand
Spoil haulage systems may include:	• rail • road • conveyor

Unit Sector(s)

Tunnel Construction

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTC305A Construct portals

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction of portals in the civil construction industry. It includes planning and preparing, excavating portal shapes, supporting excavation and form portal surrounds, installing ground support, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Implement and monitor traffic management plan requirements throughout the work 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify preliminary ground work requirements to support portal surrounds prior to excavation 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Excavate portal shape	2.1. Determine location, alignment and direction portals from details contained in job drawings and specifications 2.2. Determine method of construction for portal 2.3. Prepare material for the construction process of the selected portals according to design plans and specifications 2.4. Complete excavation to plan 2.5. Control dust and noise suppression in accordance with EPA and OHS requirements
3. Support excavation and form portal surrounds	3.1. Install sheeting and/or first set to specifications 3.2. Excavate and trim battering to design and drainage specifications
4. Install ground support	4.1. Identify ***ground support*** from project drawings and specifications 4.2. Construct base to detail drawings and specifications 4.3. Install ground support and

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	shotcrete/concrete 4.4. Place drainage and seepage provisions
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, ***maintain*** and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct portals:

- apply legislative, organisation and site requirements and procedures for constructing portals
- interpret engineering drawings and sketches
- use plant, tools and equipment
- install portals
- organise work tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to construct portals:

- the types and purposes of portals
- basic principles of soil technology for civil works
- the principles of ground support
- the types, functions, characteristics and limitations of excavation ground support systems
- the types, functions, characteristics and limitations of finishing ground support systems
- ground support systems installation techniques
- types, characteristics, uses and limitations of drilling equipment
- site and equipment safety requirements
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- portal installation methods
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for constructing portals • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of portal construction • working with others to undertake and complete the construction of portals that meets all of the required outcomes • consistent timely completion of portal construction that safely, effectively and efficiently meets the required outcomes • the construction of a portal using an excavation ground support system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction of portals

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Environmental Protection Agency (EPA) requirements • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings,

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	structures and hazardous materials • emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Tools and equipment may include:	• hand tools • excavation tools • installation and drilling equipment relevant to the selected ground support system
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management

Ground support may include:	• ground support prior to excavation, such as:
	  • rock anchors
	  • rock bolts
	  • soil nails
	  • spialling bars
	  • cable anchors
	  • canopy tubes
	  • steel sets
	• ground support to finish portal surrounds, such as:
	  • shotcrete
	  • masonry
	  • stone or concrete blockwork
	  • reinforced concrete
	  • pre-cast concrete panels
	  • ground cover

Maintain may include:	• cleaning • authorised servicing • recording and reporting of faults • authorised minor replacements • provision of assistance to maintenance personnel during maintenance and repair activities

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Unit Sector(s)

Tunnel Construction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTC401A Apply the principles of tunnel construction

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of tunnel construction tasks in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of tunnel construction tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for tunnel construction tasks within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***tunnel construction tasks*** 1.3. Ensure a ***job plan***, is available which makes best use of the available resources and meets the tunnel construction task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tunnel construction task 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective an d efficient conduct of the tunnel construction task 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** tunnel construction task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to tunnel construction practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise tunnel construction tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
- volumes
- tonnage required
- grades
- percentages
- areas
- resource consumption figures, including required supply rates
- interpret tunnel construction materials properties and test results

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- provide recommendations for the improvement of the safe, effective and efficient execution of tunnel construction tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise tunnel construction tasks:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational Health and Safety requirements and procedures
- shoring requirements and procedures
- slope management requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- tunnel construction plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of tunnel construction tasks
- tunnel construction task resource requirements and procedures
- activities scheduling requirements and procedures
- tunnel construction materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- tunnel construction monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- tunnel construction and related activities' terminology
- set out requirements and procedures
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of tunnel construction tasks • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of tunnel construction tasks • working with others to plan, prepare and conduct tunnel construction tasks • provision of clear and timely instruction and supervision by the individual of those involved in tunnel construction tasks • evidence of the consistent successful supervision of tunnel construction tasks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct tunnel construction tasks
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of tunnel construction tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Tunnel construction may include:	• road tunnels • rail tunnels

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	• pedestrian tunnels • underground services tunnels
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational Health and Safety requirements • shoring requirements • slope management requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • shoring materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks

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Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Tunnel Construction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTT301A Conduct fluid assisted directional boring

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of fluid assisted directional boring in civil construction. It includes the planning and preparing for operations, checking equipment, driving the bore and cleaning up when undertaking fluid assisted directional boring activities associated with horizontal directional drilling.

Application of the Unit

This unit includes fluid types, drilling equipment, drilling heads, installation products and tracking and guidance systems. Fluid assisted directional boring includes boring under roadways, railways, footpaths, creeks, rivers, freeways other services and may include mini, midi and maxi operations.
The unit is appropriate for those working in operational roles, at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conduct of fluid assisted directional boring 1.2. Obtained, confirm and apply work instructions, including plans, specifications, quality req uirements and operational details to the allotted task 1.3. Identify, obtain and implement ***signage*** requirements from the project traffic management plan 1.4. Ensure plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify and confirm ***environmental protection requirements*** from the project environmental management plan, and apply to the allotted task
2. Prepare for boring operations	2.1. Determine location, alignment direction, level and grade of bore from drawings and specifications 2.2. Use above and below ground survey instruments to determine the bore pathway for underground vertical and horizontal alignment 2.3. Conduct visual geological investigation of alignment to determine the differing soil types and groundwater conditions 2.4. Select bore head and ***drilling fluid*** for the strata 2.5. Position, anchor/stake down boring equipment in accordance with manufacturer's and/or site requirements
3. Conduct equipment checks	3.1. Identify and apply safety requirements 3.2. Carry out start-up, shutdown and communication procedures 3.3. Check equipment controls and functions, including implements or other attachments, anchors and/or stabilising equipment for serviceability and report faults

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	3.4. Conduct inspection and fault finding in accordance with manufacturer's specifications and/or site requirements 3.5. Carry out equipment maintenance tasks regularly
4. Drive bore hole	4.1. Prepare launch and receiving pits for inserting and receiving bore head in accordance with site requirements 4.2. Extract and dispose of mud in accordance with job specifications 4.3. Continuously monitor bore head progress for vertical and horizontal alignment 4.4. ***Monitor*** Machine for continuity of production in varied site conditions 4.5. Monitor drilling fluid to accommodate differing strata formation, in accordance with manufacturer's specifications 4.6. Remove borehead in accordance with manufacturer's recommendations, using safe handling procedures for varied site conditions 4.7. Check and fit back reaming attachment to drill string in accordance with manufacturer's recommendations 4.8. Conduct back reaming to dimensions in accordance with plans and specifications 4.9. Correctly position drums/rolls of installing product to enable safe discharge of product
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct fluid assisted directional boring:

- apply legislative, organisation and site requirements and procedures
- interpret engineering drawings, plan and specification
- apply equipment operational requirements and procedures
- use of laser control equipment
- apply electronic devices to locate electronic cable
- apply electronic equipment calibration
- apply thrust and rotation of boring equipment
- apply operational maintenance
- apply basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- apply materials safety data sheets and materials handling methods
- apply project quality requirements
- apply JSA's/safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct fluid assisted directional boring:

- site and equipment safety requirements
- drilling fluids
- categories of horizontal directional drilling
- laser control equipment
- manual handling
- confined space entry
- electronic cable locating devices
- strike alert systems
- remote units
- electronic equipment calibration
- thrust and rotation of boring equipment
- slinging procedures
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations

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- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of fluid assisted directional boring • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of least 50 metres fluid assisted directional boring • working with others to undertake and complete fluid assisted directional boring that meets all of the required outcomes • consistent timely completion of fluid assisted directional boring that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity • Aboriginal people and other people from a non English speaking background may have second

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	language issues • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances • Where applicable, physical resources should include equipment modified for people with disabilities • Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of fluid assisted directional boring

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• boring equipment • pumps • compressors • hoses • tape measures • marking equipment • crow bars • spanners • adjustable • wrenches • shovels • picks • hammers (sledge/hand) • string lines • spirit levels • dumpy levels • theodolites • brooms • hacksaws • hand saws • electronic tracking devices

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	• slings and cranes
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Drilling fluid may include:	• bentonite and water. Often known as mud it carries the debris in suspension and is then filtered through a recirculation system
Monitoring of boring may include:	• sounder • beacon • hand wired guidance system • magnetometry

Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTT302A Conduct impact moling, ramming and augering

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of impact moling, ramming and augering in civil construction. It includes the planning and preparing for operations, driving bore holes and cleaning up when undertaking impact moling, ramming, and augering activities associated with horizontal directional drilling.

Application of the Unit

This unit includes percussive moling (pneumatic / hydraulic) and pipe ramming and horizontal augering which includes boring under roadways, railways, footpaths, other services and for up to a distance of 100m.
The unit is appropriate for those working in operational roles, at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conduct of impact moling, ramming and augering 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm safety requirements from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project traffic management plan 1.5. Ensure plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify and confirm ***environmental protection requirements*** from the project environmental management plan, and apply to the allotted task
2. Prepare for boring operations	2.1. Determine location, alignment direction, level and grade of bore from drawings and specifications 2.2. Use above and below ground survey instruments to determine the bore pathway for underground vertical and horizontal alignment 2.3. Conduct visual geological investigation of alignment to determine the differing soil types and groundwater conditions 2.4. Select bore head for the strata 2.5. Position, anchor/stake down boring equipment in accordance with manufacturer's and/or site requirements
3. Conduct equipment checks	3.1. Identify and apply safety requirements 3.2. Carry out start-up, shutdown and communication procedures 3.3. Check equipment controls and functions,

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	including implements or other attachments, anchors and/or stabilising equipment for serviceability and report faults 3.4. Conduct inspection and fault finding in accordance with manufacturer's specifications and/or site requirements 3.5. Carry out equipment maintenance tasks regularly
4. Drive bore hole	4.1. Construct launch and receiving pits to specifications to accommodate bore rig and tools 4.2. Prepare launch and receiving pits for inserting and receiving bore head in accordance with site requirements 4.3. Establish traverse line of bore head to receiving pit prior to launching mole 4.4. Monitor machine for continuity of production in varied site conditions
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct impact moling, ramming and augering:

- apply legislative, organisation and site requirements and procedures
- apply equipment operational requirements and procedures
- apply site and equipment safety requirements
- use drilling fluids
- apply categories of horizontal directional drilling
- use laser control equipment
- apply manual handling requirements and procedures
- apply electronic cable locating devices
- apply slinging procedures
- interpret engineering drawings, plans and specifications
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities
- apply materials safety data sheets and materials handling methods
- apply project quality requirements
- apply JSA's/Safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct impact moling, ramming and augering:

- site and equipment safety requirements
- drilling fluids
- categories of horizontal directional drilling
- laser control equipment
- manual handling
- confined space entry
- electronic cable locating devices
- slinging procedures
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities

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- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- impact moling, ramming and augering requirements and procedures
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of impact moling, ramming and augering • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of at least 50 metres of impact moling, ramming and augering • working with others to undertake and complete impact moling, ramming and augering that meets all of the required outcomes • consistent timely completion of impact moling, ramming and augering that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity • Aboriginal people and other people from a non English speaking background may have second

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	language issues • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances • Where applicable, physical resources should include equipment modified for people with disabilities • Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete impact moling, ramming and augering

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• impact boring equipment • pumps • compressors • hoses • tape measures • marking equipment • crow bars • spanners • adjustable • wrenches • shovels • picks • hammers (sledge/hand) • string lines • spirit levels • dumpy levels • theodolites • brooms • hacksaws • hand saws • electronic tracking devices

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	• slings and cranes
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management

Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTT303A Control micro tunnelling and pipe-jacking

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of micro-tunnelling and pipe-jacking in civil construction. It includes the planning and preparing for operations, checking equipment, driving the bore and cleaning up when undertaking. micro-tunnelling and pipe-jacking activities associated with horizontal directional drilling.

Application of the Unit

This unit includes pipe-jacking systems, micro-tunnelling systems, jacking frames, pipes, lubrication and shafts for boring under roadways, railways, and footpaths. Micro-tunnelling includes laser guidance, remote controlled, steerable, controlled evacuation tunnelling methods for pipelines of one metre diameter or less and up to lengths of two hundred metres. Pipe-jacking is used to aid spoil removal and includes removal by auger, slurry conversion or vacuum extraction.
The unit is appropriate for those working in operational roles, at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm safety requirements from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project traffic management plan 1.5. Ensure plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify and confirm ***environmental protection requirements*** from the project environmental management plan, and apply to the allotted task
2. Prepare for boring operations	2.1. Determine location, alignment direction, level and grade of bore from drawings and specifications 2.2. Use above and below ground survey instruments to determine the bore pathway for underground vertical and horizontal alignment 2.3. Conduct visual geological investigation of alignment to determine the differing soil types and groundwater conditions 2.4. Select bore head and drilling fluid for the strata 2.5. Position, anchor/stake down boring equipment in accordance with manufacturer's and/or site requirements
3. Conduct equipment checks	3.1. Identify and apply safety requirements 3.2. Carry out start-up, shutdown and communication procedures 3.3. Check equipment controls and functions,

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	including implements or other attachments, anchors and/or stabilising equipment for serviceability and report faults 3.4. Conduct inspection and fault finding in accordance with manufacturer's specifications and/or site requirements 3.5. Carry out equipment maintenance tasks regularly
4. Drive bore hole	4.1. Construct launch and receiving pits to specifications to accommodate bore rig and tools 4.2. Identify and implement trench collapse prevention for launch and receiving pits 4.3. Establish thrust wall to specific design in accordance with pipe size and soil characteristics 4.4. Determine traverse line of pilot hole to receiving pit in accordance with plans and specifications 4.5. Confirm traverse line of pilot hole to receiving pit at specified distances 4.6. Collect and dispose spoil in accordance with job specifications 4.7. Select and attach augers to drilling machine in accordance with design specifications 4.8. Jack through casings/pipes to receiving pit in compliance with design specifications 4.9. Monitor equipment for continuity of production in varied site conditions
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct micro-tunnelling and pipe-jacking:

- apply legislative, organisation and site requirements and procedures
- apply equipment operational requirements and procedures
- apply site and equipment safety requirements
- use drilling fluids
- apply categories of horizontal directional drilling
- use laser control equipment
- apply manual handling
- apply electronic cable locating devices
- apply slinging procedures
- interpret engineering drawings, plans and specifications
- identify equipment types, characteristics, technical capabilities and limitations
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities
- apply materials safety data sheets and materials handling methods
- apply project quality requirements
- apply JSA's/safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct micro-tunnelling and pipe-jacking:

- site and equipment safety requirements
- drilling fluids
- categories of horizontal directional drilling
- laser control equipment
- manual handling
- confined space entry
- electronic cable locating devices
- slinging procedures
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures

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- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- micro-tunnelling and pipe-jacking requirements and procedures
- apply JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of micro-tunnelling and pipe-jacking • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of at least 50 metres micro-tunnelling and pipe-jacking • working with others to undertake and complete micro-tunnelling and pipe-jacking that meets all of the required outcomes • consistent timely completion of micro-tunnelling and pipe-jacking that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete micro-tunnelling and pipe-jacking

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Pipe-jacking pipes may include:	• steel • hobar • clay • concrete pipes
Signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• micro-tunnelling and pipe-jacking equipment • pumps • compressors • hoses • tape measures • marking equipment • crow bars • spanners • adjustable • wrenches • shovels • picks • hammers (sledge/hand) • string lines • spirit levels • dumpy levels

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	• theodolites • brooms • hacksaws • hand saws • electronic tracking devices • slings and cranes
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management

Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTT304A Undertake on-line replacement for existing pipeline systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the undertaking on-line replacement for existing pipeline systems in civil construction. It includes the planning and preparing for operations, site survey, rehabilitation and on-line replacement and cleaning up when undertaking the on-line replacement of pipes or pipe sections for the rehabilitation of existing services pipeline system.

Application of the Unit

This unit includes percussive pipe-bursting, hydraulic pipe-bursting, pipe splitting, pipe eating, pipe reaming and lead service pipe replacement.
This unit is appropriate for those working in operational roles, at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the on-line replacement for existing pipeline systems 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm safety requirements from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project traffic management plan 1.5. Ensure plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify and confirm ***environmental protection requirements*** from the project environmental management plan, and apply to the allotted task
2. Perform site survey	2.1. Notify and obtain approval from property owners and occupiers for entry onto their property 2.2. Determine site conditions by visual inspection, plans, discussion with land owners and information from service utilities 2.3. Locate Underground utilities 2.4. Maintain system serviceability during rehabilitation works in accordance with asset owners' policies, allowable duration of service interruption, and project specifications 2.5. Survey and record existing site conditions
3. Initiate rehabilitation work	3.1. Prepare entry and exit pits where specified in accordance with site and OHS requirements 3.2. Follow confined space entry procedures

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	3.3. Monitor installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications and project specifications
4. Undertake on-line replacement	4.1. Determine fault with the aid of plans, drawings, CCTV recordings or other mechanisms 4.2. Select ***on-line replacement*** method appropriate to the fault 4.3. Remove existing pipeline structure designated for replacement using tool selected 4.4. Pull into place new ***pipe*** structure 4.5. Install replacement components to comply with design requirements and manufacturer's specifications 4.6. Conduct curing process to comply with manufacturer's specifications where specified 4.7. Correctly secure and seal termination at ends of process in accordance with manufacturer's specifications 4.8. Open junctions for inspection and operation 4.9. ***Monitor*** installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to undertake on-line replacement for existing pipeline systems:

- apply legislative, organisation and site requirements and procedures
- apply equipment operational requirements and procedures
- apply site and equipment safety requirements
- apply laser control equipment
- apply manual handling
- apply confined space entry requirements
- interpret engineering drawings, plans and specifications
- apply equipment types, characteristics, technical capabilities and limitations
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities
- apply materials safety data sheets and materials handling methods
- apply project quality requirements
- apply JSA's/safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to undertake on-line replacement for existing pipeline systems:

- site and equipment safety requirements
- laser control equipment
- manual handling
- confined space entry
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- existing pipeline systems on-line replacement requirements and procedures
- pipeline systems
- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for undertaking on-line replacement for existing pipeline systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of at least two different on-line replacements for existing pipeline systems • working with others to undertake and complete the undertaking on-line replacement for existing pipeline systems that meets all of the required outcomes • consistent timely completion of on-line replacement for existing pipeline systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the on-line replacement for existing pipeline systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• pumps • compressors • hoses • tape measures • marking equipment • crow bars • spanners • adjustable • wrenches • shovels • picks • hammers (sledge/hand) • string lines • spirit levels • dumpy levels • theodolites • brooms • hacksaws • hand saws • electronic tracking devices • slings and cranes

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Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
On-line replacement may include:	• replacing existing pipes with the same size pipe • upsizing without trenching • being conducted while the pipeline remains operational
Pipe characteristics may include:	• size • shape • material • joint type • depth • grade • rake condition • service off takes • on-line structures
Monitoring of replacement may include:	• sounder • beacon • hand wired guidance system • magnetometry

Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTT305A Undertake localised repair and sealing of existing pipeline systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the undertaking of localised repair and sealing of existing pipeline systems in civil construction. It includes the planning and preparing for operations, surveying the site, undertaking localised repair and sealing and cleaning up when undertaking the rehabilitation of existing services pipeline system.

Application of the Unit

Localised repair and sealing is used to fix minor structural defects in pipes, these may include joint sealing, sleeve or patch repairs, resin injection systems, fill and drain systems, robotic repairs, mechanical sealing and pipe re-rounding when repairing or renovating non-man-entry pits, including sewer, gas and water.
This unit is appropriate for those working in operational roles, at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the undertaking of localised repair and sealing of existing pipeline systems 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm safety requirements from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project traffic management plan 1.5. Ensure plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify and confirm ***environmental protection requirements*** from the project environmental management plan, and apply to the allotted task
2. Perform site survey	2.1. Notify property owners and occupiers and approval for entry onto their property obtained 2.2. Determine site conditions by visual inspection, plans, discussion with land owners and information from service utilities 2.3. Locate underground utilities 2.4. Maintain system serviceability during rehabilitation works in accordance with asset owners' policies, allowable duration of service interruption, and project specifications 2.5. Survey and record existing site conditions
3. Initiate rehabilitation works	3.1. Prepare entry and exit pits where specified in accordance with site and OHS requirements

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	3.2. Follow confined space entry procedures 3.3. Monitor installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications and project specifications
4. Undertake localised repair and sealing	4.1. Determine fault with the aid of plans, drawings, CCTV recording or other mechanisms 4.2. Select repair or sealing method appropriate to the fault 4.3. Apply pressure cleaning to the designated location 4.4. Install repair or sealing material to comply with design requirements and manufacturer's specifications 4.5. Conduct curing process to comply with manufacturer's specifications 4.6. Correct secure and seal termination at ends of process in accordance with manufacturer's specifications 4.7. Open junctions for inspection and operation 4.8. Monitor installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to undertake localised repair and sealing of existing pipeline systems:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply laser control equipment
- apply manual handling
- apply confined space entry
- interpret engineering drawings, plans and specifications
- apply equipment types, characteristics, technical capabilities and limitations
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities
- apply materials safety data sheets and materials handling methods
- apply project quality requirements
- apply localised repair and sealing methods
- identify pipeline systems
- apply JSA's/safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to undertake localised repair and sealing of existing pipeline systems:

- site and equipment safety requirements
- laser control equipment
- manual handling
- confined space entry
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- localised repair and sealing methods
- pipeline systems

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- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for undertaking localised repair and sealing of existing pipeline systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of at least two localised repair and sealing of existing pipeline systems • working with others to undertake and complete the localised repair and sealing of existing pipeline systems that meets all of the required outcomes • consistent timely completion of undertaking localised repair and sealing of existing pipeline systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the localised repair and sealing of existing pipeline systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• repair and sealing equipment • pumps • compressors • hoses • tape measures • marking equipment • crow bars • spanners • adjustable • wrenches • shovels • picks • hammers (sledge/hand) • string lines • spirit levels • dumpy levels • theodolites • brooms • hacksaws • hand saws • electronic tracking devices

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	• slings and cranes
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Drilling fluid may include:	• bentonite and water. Often known as mud it carries the debris in suspension and is then filtered through a recirculation system
Monitoring of repair and sealing may include:	• sounder • beacon • hand wired guidance system • magnetometry

Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTT306A Install cure in-place linings for existing pipeline systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the installing cure in-place linings for existing pipeline systems in civil construction. It includes the planning and preparing for operations, surveying the site, completing the cure in-place lining and cleaning up when undertaking the rehabilitation of existing services pipeline system.

Application of the Unit

This unit includes thermal cure, UV cure and ambient cure liners for repairing or renovating non-man-entry pits, including gas, sewer and water. Cure in-place linings may include but not be limited to a resin impregnated sock inserted in the pipe and subsequently forced against the wall using water or air. Curing occurs by heat or ultra violet light. Cure in-place linings may be used for pipes between 50 mm and 750 mm and may also be used for pipes which are not round

This unit is appropriate for those working in operational roles, at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to installing cure in-place linings for existing pipeline systems 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm safety requirements from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project traffic management plan 1.5. Ensure plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify and confirm ***environmental protection requirements*** from the project environmental management plan, and apply to the allotted task
2. Perform site survey	2.1. Notify and obtain approval of property owners and occupiers for entry onto their property 2.2. Determine site conditions by visual inspection, plans, discussion with land owners and information from service utilities 2.3. Located Underground utilities 2.4. Maintain system serviceability during rehabilitation works in accordance with asset owners' policies, allowable duration of service interruption, and project specifications 2.5. Survey and record existing site conditions
3. Initiate rehabilitation work	3.1. Prepare entry and exit pits where specified in accordance with site and OHS requirements

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	3.2. Follow confined space entry procedures 3.3. ***Monitor*** installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications and project specifications
4. Complete cure in-place lining Complete cure in-place lining	4.1. Determine fault with the aid of plans, drawings, CCTV recordings or other mechanisms 4.2. Select resin impregnated liners appropriate to the fault 4.3. Apply pressure cleaning to the designated location 4.4. Install cure in-place lining material to comply with design requirements and manufacturer's specifications 4.5. Conduct curing process to comply with manufacturer's specifications 4.6. Correctly secure and seal termination at ends of process in accordance with manufacturer's specifications 4.7. Open junctions for inspection and operation 4.8. Monitor installation process and finished product to ensure conformity to the design requirements in accordance
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to install cure in-place linings for existing pipeline systems:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply laser control equipment
- apply manual handling
- apply confined space entry
- use remote unit
- interpret engineering drawings, plans and specifications
- apply equipment types, characteristics, technical capabilities and limitations
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities
- apply materials safety data sheets and materials handling methods
- apply project quality requirements
- identify pipeline systems
- apply JSA's/safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to install cure in-place linings for existing pipeline systems:

- site and equipment safety requirements
- laser control equipment
- manual handling
- confined space entry
- use of remote unit
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- cure in-place linings requirements and procedures

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- pipeline systems
- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing cure in-place linings for existing pipeline systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of at least two different cure in-place linings for existing pipeline systems • working with others to undertake and complete the installation of cure in-place linings for existing pipeline systems that meets all of the required outcomes • consistent timely completion of the installing of cure in-place linings for existing pipeline systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of cure in-place linings for existing pipeline systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• pumps • compressors • hoses • tape measures • marking equipment • crow bars • spanners • adjustable • wrenches • shovels • picks • hammers (sledge/hand) • string lines • spirit levels • dumpy levels • theodolites • brooms • hacksaws • hand saws • electronic tracking devices • slings and cranes

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Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Monitoring of boring may include:	• sounder • beacon • hand wired guidance system • magnetometry

Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTT307A Spray linings for existing pipeline systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the spray linings for existing pipeline systems in civil construction. It includes the planning and preparing for operations, checking equipment, driving the bore and cleaning up when undertaking the spray lining process for the rehabilitation of existing services pipeline system.

Application of the Unit

The unit includes cement mortar lining and epoxy lining to repair or renovate non-man-entry pits, including water. Spray lining is usually applied with a robotic spraying machine. This process is normally applied to small diameter pipelines.
This unit is appropriate for those working in operational roles, at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to spray linings for existing pipeline systems 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm safety requirements from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project traffic management plan 1.5. Ensure plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify and confirm ***environmental protection requirements*** from the project environmental management plan, and apply to the allotted task
2. Perform site survey	2.1. Notify property owners and occupiers and approval for entry onto their property obtained 2.2. Determine site conditions by visual inspection, plans, discussion with land owners and information from service utilities 2.3. Locate underground utilities 2.4. Maintain system serviceability during rehabilitation works in accordance with asset owners' policies, allowable duration of service interruption, and project specifications 2.5. Survey and record existing site conditions
3. Initiate rehabilitation work	3.1. Prepare entry and exit pits where specified in accordance with site and OHS requirements 3.2. Follow confined space entry procedures

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	3.3. Monitor installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications and project specifications
4. Undertake spray lining	4.1. Determine fault with the aid of plans, drawings, CCTV recordings or other mechanisms 4.2. Select spray lining method appropriate to the fault 4.3. Apply pressure cleaning to the designated location 4.4. Spray existing pipeline structure designated for lining using tool selected 4.5. Install ***spray lining*** material to comply with design requirements and manufacturer's specifications 4.6. Conduct curing process to comply with manufacturer's specifications 4.7. Correctly secure and seal termination at ends of process in accordance with manufacturer's specifications 4.8. Open junctions for inspection and operation 4.9. Monitor installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications and project specifications
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to spray linings for existing pipeline systems:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply laser control equipment
- apply manual handling
- apply confined space entry
- conduct application of thrust and rotation
- interpret engineering drawings, plans and specifications
- apply equipment types, characteristics, technical capabilities and limitations
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities
- apply materials safety data sheets and materials handling methods
- apply project quality requirements
- identify pipeline systems
- apply JSA's/safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to spray linings for existing pipeline systems:

- site and equipment safety requirements
- laser control equipment
- manual handling
- confined space entry
- application of thrust and rotation
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- spray linings requirements and procedures

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- pipeline systems
- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for spray linings for existing pipeline systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of at least two different spray linings for existing pipeline systems • working with others to undertake and complete the spray linings for existing pipeline systems that meets all of the required outcomes • consistent timely completion of spray linings for existing pipeline systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the spray linings for existing pipeline systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• pumps • compressors • hoses • tape measures • marking equipment • crow bars • spanners • adjustable • wrenches • shovels • picks • hammers (sledge/hand) • string lines • spirit levels • dumpy levels • theodolites • brooms • hacksaws • hand saws • electronic tracking devices • slings and cranes

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Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Monitoring of boring may include:	• sounder • beacon • hand wired guidance system • magnetometry
Spray lining may include:	• cement mortar • epoxy resin lining

Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTT308A Install close-fit linings for existing pipeline systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of close-fit linings for existing pipeline systems in civil construction. It includes the planning and preparing for operations, undertaking site survey, completing close-fit lining and clean up when undertaking the rehabilitation of existing services pipeline system.

Application of the Unit

This unit includes swaged liners, folded liners and expanded spiral liners for repair or renovation of non-man-entry pits, including sewer, gas and water. Close-fit linings are used in circumstances where maintaining bore diameter is essential and annulus grouting can be avoided. It may include heat or pressure to apply the lining to the existing pipe. This unit is appropriate for those working in operational roles, at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to installation of close-fit linings for existing pipeline systems 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm safety requirements from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project traffic management plan 1.5. Ensure plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify and confirm ***environmental protection requirements*** from the project environmental management plan, and apply to the allotted task
2. Perform site survey	2.1. Notify property owners and occupiers and approval for entry onto their property obtained 2.2. Determine site conditions by visual inspection, plans, discussion with land owners and information from service utilities 2.3. Locate underground utilities 2.4. Maintain system serviceability during rehabilitation works in accordance with asset owners' policies, allowable duration of service interruption, and project specifications 2.5. Survey and record existing site conditions
3. Initiate rehabilitation works	3.1. Prepare entry and exit pits where specified in accordance with site and OHS requirements

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	3.2. Follow confined space entry procedures 3.3. Monitor installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications and project specifications
4. Undertake close-fit lining	4.1. Determine fault with the aid of plans, drawings, CCTV recording or other mechanisms 4.2. Select close fit lining method appropriate to the fault 4.3. Apply pressure cleaning to the designated location 4.4. Pull lining through the pipe and set in position 4.5. Install close fit lining material to comply with design requirements and manufacturer's specifications 4.6. Conduct curing process to comply with manufacturer's specifications 4.7. Correctly secure and seal termination at ends of process in accordance with manufacturer's specifications 4.8. Open junctions for inspection and operation 4.9. ***Monitor*** installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment and equipment are cleaned, checked, maintained and stored

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to install close-fit linings for existing pipeline systems:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply laser control equipment
- apply manual handling
- apply confined space entry
- conduct application of thrust and rotation
- interpret engineering drawings, plans and specifications
- apply equipment types, characteristics, technical capabilities and limitations
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities
- apply materials safety data sheets and materials handling methods
- apply project quality requirements
- identify pipeline systems
- apply JSA's/safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to install close-fit linings for existing pipeline systems:

- site and equipment safety requirements
- laser control equipment
- manual handling
- confined space entry
- application of thrust and rotation
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- close fit lining requirements and procedures

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- pipeline systems
- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the installation of close-fit linings for existing pipeline systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of at least two different close-fit linings for existing pipeline systems • working with others to undertake and complete the close-fit linings for existing pipeline systems that meets all of the required outcomes • consistent timely completion of close-fit linings for existing pipeline systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of close-fit linings for existing pipeline systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• close fit lining application equipment • pumps • compressors • hoses • tape measures • marking equipment • crow bars • spanners • adjustable • wrenches • shovels • picks • hammers (sledge/hand) • string lines • spirit levels • dumpy levels • theodolites • brooms • hacksaws • hand saws • electronic tracking devices

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	• slings and cranes
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Monitoring of boring may include:	• sounder • beacon • hand wired guidance system • magnetometry

Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTT309A Install slip lining in existing pipeline systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of slip-lining in existing pipeline systems in civil construction. It includes the planning and preparing for operations, completing site survey, undertaking slip-lining and cleaning up when undertaking the rehabilitation of existing services pipeline system.

Application of the Unit

This unit includes basic slip-lining, spirally wound liners and live insertion for the repair renovation of non-man-entry pits, including water and gas mains. Slip-lining includes the insertion of a new pipeline of smaller diameter into the defective pipe and the annulus being grouted. This unit is appropriate for those working in operational roles, at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to installation of slip-lining in existing pipeline systems 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm safety requirements from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project traffic management plan 1.5. Ensure plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify and confirm ***environmental protection requirements*** from the project environmental management plan, and apply to the allotted task
2. Perform site survey	2.1. Notify property owners and occupiers and approval for entry onto their property obtained 2.2. Determine site conditions by visual inspection, plans, discussion with land owners and information from service utilities 2.3. Locate underground utilities 2.4. Maintain system serviceability during rehabilitation works in accordance with asset owners' policies, allowable duration of service interruption, and project specifications 2.5. Survey and record existing site conditions
3. Initiate rehabilitation works	3.1. Prepare entry and exit pits where specified in accordance with site and OHS requirements 3.2. Follow confined space entry procedures

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	3.3. Monitor installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications and project specifications
4. Undertake slip-lining	4.1. Determine fault with the aid of plans, drawings, CCTV recordings or other mechanisms Slip-lining method is selected appropriate to the fault 4.2. Select slip-lining method appropriate to the fault 4.3. Apply pressure cleaning to the designated location 4.4. Spiral/push liner into the existing pipe 4.5. Install slip-lining material to comply with design requirements and manufacturer's specifications 4.6. Correctly secure and seal termination at ends of process in accordance with manufacturer's specifications 4.7. Open junctions for inspection and operation 4.8. ***Monitor*** installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications and project specifications
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to install slip-lining in existing pipeline systems:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply laser control equipment
- apply manual handling
- apply confined space entry
- interpret engineering drawings, plans and specifications
- identify equipment types, characteristics, technical capabilities and limitations
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities
- apply materials safety data sheets and materials handling methods
- apply project quality requirements
- identify pipeline systems
- apply JSA's/safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to install slip-lining in existing pipeline systems

- site and equipment safety requirements
- laser control equipment
- manual handling
- confined space entry
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- slip-lining requirements and procedures
- pipeline systems
- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the installation of slip-lining in existing pipeline systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installing at least two different slip-lining in existing pipeline systems • working with others to undertake and complete the installation of slip-lining in existing pipeline systems that meets all of the required outcomes • consistent timely completion of the installation of slip-lining in existing pipeline systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of slip-lining in existing pipeline systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• pumps • compressors • hoses • tape measures • marking equipment • crow bars • spanners • adjustable • wrenches • shovels • picks • hammers (sledge/hand) • string lines • spirit levels • dumpy levels • theodolites • brooms • hacksaws • hand saws • electronic tracking devices • slings and cranes

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Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Monitoring of boring may include:	• sounder • beacon • hand wired guidance system • magnetometry

Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTT310A Renovate large diameter pipes and chambers

Modification History

Not applicable.

Unit Descriptor

This unit covers the renovation of large diameter pipes and chambers in civil construction. It includes the planning and preparing for operations, completing site survey, undertaking renovation of large diameter pipes and chambers for the rehabilitation of existing services pipeline system.

Application of the Unit

This unit includes pre-formed liners in-situ renovation, and access chamber (manhole) renovation. This unit is appropriate for those working in operational roles, at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the renovation of large diameter pipes and chambers 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm safety requirements from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project traffic management plan 1.5. Ensure plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify and confirm ***environmental protection requirements*** from the project environmental management plan, and apply to the allotted task
2. Perform site survey	2.1. Notify property owners and occupiers and approval for entry onto their property obtained 2.2. Determine site conditions by visual inspection, plans, discussion with land owners and information from service utilities 2.3. Locate underground utilities 2.4. Maintain system serviceability during rehabilitation works in accordance with asset owners' policies, allowable duration of service interruption, and project specifications 2.5. Survey and record existing site conditions
3. Initiate rehabilitation work	3.1. Prepare entry and exit pits where specified in accordance with site and OHS requirements 3.2. Follow confined space entry procedures

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	3.3. Monitor installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications and project specifications
4. Undertake renovation of large diameter pipes and chambers	4.1. Determine fault by physical inspection 4.2. Select renovation method appropriate to the fault 4.3. Piece together or patch fractured or ruptured section 4.4. Complete renovation to comply with design requirements and manufacturer's specifications 4.5. Conduct curing process to comply with manufacturer's specifications where specified 4.6. Correctly secure and seal termination at ends of process in accordance with manufacturer's specifications 4.7. Open junctions for inspection and operation 4.8. Monitor installation process and finished product to ensure conformity to the design requirements in accordance with manufacturer's specifications and project specifications
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to renovate large diameter pipes and chambers:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply laser control equipment
- apply manual handling
- apply confined space entry
- interpret engineering drawings, plans and specifications
- apply equipment types, characteristics, technical capabilities and limitations
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities
- apply materials safety data sheets and materials handling methods
- apply project quality requirements
- identify pipeline systems
- apply JSA's/safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to renovate large diameter pipes and chambers:

- site and equipment safety requirements
- laser control equipment
- manual handling
- confined space entry
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- large diameter pipes and chambers renovation requirements and procedures
- pipeline systems
- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the renovation of large diameter pipes and chambers • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the at least two different renovations of large diameter pipes and chambers • working with others to undertake and complete the renovation of large diameter pipes and chambers that meets all of the required outcomes • consistent timely completion of the renovation of large diameter pipes and chambers that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the renovation of large diameter pipes and chambers

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

In-situ renovation may include:	• the following fixed with spacers and grouted in position with an injection method:
	  • glass reinforced plastic
	  • glass reinforced concrete or ferro cement

Pre-formed liners may include:	• sprayed concrete • reinforced concreting • spirally wound liners, • epoxy coatings • repointing
Signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• pumps • compressors • hoses • tape measures • marking equipment • crow bars • spanners • adjustable • wrenches • shovels • picks

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	• hammers (sledge/hand) • string lines • spirit levels • dumpy levels • theodolites • brooms • hacksaws • hand saws • electronic tracking devices • slings and cranes
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management

Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTT401A Apply the principles for the installation of underground services using trenchless technology

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of the installation of underground service using trenchless technology. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting for the installation of underground service using trenchless technology tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for the installation of underground service using trenchless technology tasks within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the supervision of the installation of underground service using trenchless technology 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***installation of underground service using trenchless technology tasks*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** asphalt paving and compaction task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise the installation of underground service using trenchless technology tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret manufacturer's requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret materials properties and test results

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Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise the installation of underground service using trenchless technology tasks:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- trenchless technology underground service installation plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution for the installation of underground service using trenchless technology tasks, including at least one of the following methods:
- impact moling
- ramming
- augering
- fluid assisted directional boring
- micro tunnelling
- pipe jacking
- the installation of underground service using trenchless technology task resource requirements and procedures
- activities scheduling requirements and procedures
- the installation of underground service using trenchless technology materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- trenchless technology underground service installation monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques

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- estimating principles
- civil works construction sequencing
- set out requirements and procedures
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of the installation of underground service using trenchless technology • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of the installation of underground service using trenchless technology • working with others to plan, prepare and conduct the installation of underground service using trenchless technology • provision of clear and timely instruction and supervision by the individual of those involved in the installation of underground service using trenchless technology • evidence of the consistent successful supervision of the installation of underground service using trenchless technology
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the installation of underground service using trenchless technology
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the installation of underground service using trenchless technology

Guidance information for	Consult the SkillsDMC User Guide for further

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assessment	information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements
may include:
	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• types of asphalt
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

installation of underground	• water mains pipelines

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service using trenchless technology may include:	• stormwater systems, including: • pipes • box culverts • pre-cast gully pits • irrigation lines • sewage pipelines • pre-cast access chambers • gas pipelines • oil pipelines • other conduits for services such as: • telecommunication cables • data cables • power cables • subway and underpasses • service tunnels
installation of underground service using trenchless technology tasks may include:	• site preparation methods • methods for location of existing underground services • launching and reception pit excavation methods • shoring methods • slope management methods • impact moling methods • ramming methods • augering methods • fluid assisted directional boring methods • pullback methods • micro tunnelling methods • pipe jacking methods • use of guidance systems • site cleanup • sediment control methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements

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	• shoring requirements • slope management requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • shoring materials • sub-contractor services labour
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • laser tracking • CCTV • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements

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	• task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICTT402A Apply the principles for the repair and rehabilitation of underground services using trenchless technology

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of the repair and rehabilitation of underground service using trenchless technology in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting for the repair and rehabilitation of underground service using trenchless technology tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, for the supervision for the repair and rehabilitation of underground service using trenchless technology tasks within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the supervision of the repair and rehabilitation of underground service using trenchless technology 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***repair and rehabilitation of underground service using trenchless technology tasks*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** the repair and rehabilitation of underground service using trenchless technology task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise the repair and rehabilitation of underground service using trenchless technology tasks:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpreting manufacturer's requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret materials properties and test results

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Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise the repair and rehabilitation of underground service using trenchless technology tasks:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- shoring requirements and procedures
- slope management requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- trenchless technology underground service repair and rehabilitation plant and equipment capabilities and application, including at least one of the following methods:
- on-line replacement
- localised repair and sealing
- cure in-place lining
- spray lining
- slip lining
- renovation of large diameter pipes and chambers
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution for the repair and rehabilitation of underground service using trenchless technology tasks
- trenchless technology underground service repair and rehabilitation resource requirements and procedures
- activities scheduling requirements and procedures
- the repair and rehabilitation of underground service using trenchless technology materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- works planning techniques
- engineering survey principles
- relationship between various areas of civil works
- team leadership techniques
- trenchless technology underground service repair and rehabilitation monitoring

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methods
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- works planning techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of the repair and rehabilitation of underground service using trenchless technology • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of the repair and rehabilitation of underground service using trenchless technology tasks • working with others to plan, prepare and conduct the repair and rehabilitation of underground service using trenchless technology tasks • provision of clear and timely instruction and supervision by the individual of those involved in the repair and rehabilitation of underground service using trenchless technology tasks • evidence of the consistent successful supervision of the repair and rehabilitation of underground service using trenchless technology tasks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the repair and rehabilitation of underground service using trenchless technology tasks
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the repair and

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	rehabilitation of underground service using trenchless technology tasks
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements
may include:
	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• types of asphalt
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

The repair and rehabilitation of	• water mains pipelines

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underground service using trenchless technology may include:	• stormwater systems, including:
	  • pipes
	  • box culverts
	  • pre-cast gully pits
	• sewage pipelines
	• pre-cast access chambers
	• gas pipelines
	• other conduits for services such as:
	  • telecommunication cables
	  • data cables
	  • power cables

The repair and rehabilitation of underground service using trenchless technology tasks may include:	• on-line replacement • localised repair and sealing • cure in-place lining • spray lining • close-fit lining • slip lining • renovation of large diameter pipes and chambers
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • shoring requirements • slope management requirements • requirements for the location of existing underground services • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements

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Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • shoring materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • laser tracking • CCTV • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

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Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD501A Prepare detailed design of foundations

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of foundations in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of foundations works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of foundations within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of foundations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***foundations project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of foundations	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of foundations 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the foundations that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed foundations 2.5. Participate in the review of the foundations design with peers and stakeholders 2.6. Complete the documentation of the foundations design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of foundations	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of foundations	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and

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	recommend changes for the continuous improvements of foundations detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of foundations:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret foundations options selection data
- select of foundations options
- calculate of loads, sheer forces, bending moments, stresses, areas, volumes and mass
- apply strength of materials and statics to the resolution of structural problems
- analyse foundations and design footings
- size of foundations components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design

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and documentation of foundations:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- foundations design principles
- foundations options
- foundations geometric requirements
- potential hazards, constraints and conditions that may effect foundations design and construction
- trench and pit shoring requirements
- current industry best practice in foundations design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of foundations construction tasks
- foundations materials characteristics
- foundations construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of foundations • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of foundations • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of foundations that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of foundations • consistent successful completion of the detailed design and documentation of foundations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of foundations
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of foundations that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the detailed design and documentation of foundations • provision of clear and timely required support and advice on the completion of the detailed design and documentation of foundations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Foundations may include those used for:	• bridges • jetties and wharves • sign gantries • vertical sign supports • noise barrier supports • processing plants • buildings
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements

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	• project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • loads
	  • sheer forces
	  • bending moments
	  • stresses
	  • construction materials and services quantities
	  • construction cost estimates
	• recommended sizing of components
	• recommended concrete strengths
	• recommended reinforcement sizing and location
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes

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	• construction notes • supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD502A Prepare detailed design of lighting

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of lighting in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of lighting works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of lighting within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of lighting	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm the lighting project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of lighting	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of lighting 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the lighting that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed lighting 2.5. Participate in the review of the lighting design with peers and stakeholders 2.6. Complete the documentation of the lighting design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of lighting	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of lighting	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and

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	recommend changes for the continuous improvements of lighting detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of lighting:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret lighting options selection data
- determine lighting capacity requirements
- select lighting options
- size lighting components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate of lighting requirements and power demand and consumption
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of lighting:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures

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- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- lighting options
- lighting geometric requirements
- potential hazards, constraints and conditions that may affect lighting design and construction
- current industry best practice in lighting design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of lighting construction tasks
- lighting equipment capabilities
- power demand and consumption
- lighting construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of lighting • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of lighting • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of lighting that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of lighting • consistent successful completion of the detailed design and documentation of lighting
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of lighting
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of lighting that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the detailed design and documentation of lighting • provision of clear and timely required support and advice on the detailed design and documentation of lighting
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Lighting may include its use for:	• roads, • bridges • jetties and wharves • car parks • industrial hardstands • tunnels • signage • intermodal facilities
Project requirements and information may include:	• project specifications • contractual requirements

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	• client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • lighting requirements
	  • power demand and consumption
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD503A Prepare work zone traffic management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation, documentation and completion of work zone traffic management plans in Civil Construction. It includes the planning for the preparation, undertaking of the preparation, finalisation of the preparation processes and supporting the application of the preparation.

Application of the Unit

This unit requires the identification of plan inputs, production of calculations, drawings, plan options and solutions and specifications required for the implementation of work zone traffic management plan, it does not include the certification of the plan.
This unit is appropriate for those working in a management role or as a technical specialist, preparing and documenting work zone traffic management plans within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the preparation of work zone traffic management plans	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***work zone traffic management plan project requirements and information*** 1.3. Prepare a ***preparation plan*** which makes best use of the available resources and meets the traffic management plans requirements
2. Undertake the work zone traffic management plan preparation	2.1. Interpret and analyse the relevant data and identify the available viable options for the work zone traffic management plan 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed plan*** of the work zone traffic management plan that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the work zone traffic management plan 2.5. Participate in the review of the work zone traffic management plan preparation with peers and stakeholders 2.6. Complete the documentation of the work zone traffic management plan preparation 2.7. Monitor and coordinate the progress of other team members involved in the preparation process to ensure the effective and efficient completion of the plan 2.8. Gain approval of the plan
3. Finalise preparation processes of work zone traffic management plan	3.1. Ensure filing of preparation records is completed 3.2. Complete and submit preparation cost and other reporting 3.3. Participate in performance review of the preparation process 3.4. Seek client feedback and contribute to the verification of the plan 3.5. Close out all systems

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4. Support and review the application of the work zone traffic management plan	4.1. Provide clarification and advice to those applying the plan 4.2. Review the application of the plan and recommend changes for the continuous improvements of work zone traffic management plans 4.3. Contribute to the validation of the plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to prepare and document work zone traffic management plans:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret traffic management plan briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret traffic analysis data
- determine traffic management plan capacity requirements
- select traffic management plan options
- size traffic management plan components
- provide leadership and coordination
- choose appropriate implementation techniques
- develop and apply design plans
- apply computer based design technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate flow rates, level of service, capacities and percentages
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to prepare and document work zone traffic management plans:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures

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- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- principles of road user behaviour
- current industry best practice
- traffic management plan options
- traffic management plan geometric requirements
- potential hazards, constraints and conditions that may affect traffic management plan design and implementation
- current industry best practice in traffic management plan design and implementation
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of traffic management plan implementation tasks
- traffic management plan implementation structures capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the preparation and documentation of work zone traffic management plans • implementation of procedures and techniques for the safe, effective and efficient preparation and documentation of work zone traffic management plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of work zone traffic management plans that best meet the required outcomes • working with others to undertake and complete the preparation and documentation of work zone traffic management plans • consistent successful preparation and documentation of work zone traffic management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the preparation and documentation of work zone traffic management plans
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of work zone traffic management plans that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary

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	evidence of the candidate's: • working with others to undertake and complete the preparation and documentation of work zone traffic management plans • provision of clear and timely required support and advice on the preparation and documentation of work zone traffic management plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm may include:	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Work zone traffic management plan may include:	• any work zone where:
	  • members of the public can interact with construction or delivery personnel, vehicles, plant and equipment;
	  • delivery vehicles can interact with construction personnel, vehicles, plant and equipment
	  • internal to the work zone, where construction personnel, plant and equipment interact
	• the work zone traffic management plan may

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	need to include the access roads to and from the public roads
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Preparation plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • preparation process communication and reporting requirements

Preferred option may include:	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the plan
	  • maintainability of the completed works

Detailed plan may include:	• calculations, including:
	  • level of service
	  • capacity
	  • construction materials and services quantities
	  • construction cost estimates
	• selection and specification of traffic management structures and systems, including:
	  • roundabouts
	  • mediums
	  • entry and exit lanes
	  • merging lanes
	  • traffic barriers
	  • lane marking requirements
	  • traffic speed limits
	  • traffic signals or control personnel

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	• warning signs • communication requirements and procedures • drawings • risk assessment of: • the existing conditions • the application of the plan • maintainability of the works • health, safety and environmental requirements • contribution to ancillary documentation, which may include: • preparation notes • construction notes • supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD504A Prepare detailed design of environmental controls

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of environmental controls in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of environmental controls works, it does not include the certification of the design.
This unit is appropriate for those working in a management role or as a technical specialist, for the completion of detailed design and documentation of environmental controls within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of environmental controls	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***environmental controls project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of environmental controls	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of environmental controls 2.2. Complete the ***detailed design*** of the environmental controls that safely, effectively and efficiently meets the required project outcomes 2.3. Complete the detailed design of the environmental controls that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed environmental controls 2.5. Participate in the review of the environmental controls design with peers and stakeholders 2.6. Complete the documentation of the environmental controls design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of environmental controls	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems

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4. Support and review the application of the design of environmental controls	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of environmental controls detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of environmental controls:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret environmental controls test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret environmental controls selection data
- determine environmental controls loadings or capacity requirements
- select environmental controls options
- size environmental controls components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer based design technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, flow rates, capacities, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design

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and documentation of environmental controls:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- environmental controls options
- environmental controls geometric requirements
- environmental controls surfacing requirements
- potential hazards, constraints and conditions that may affect environmental controls design and construction
- current industry best practice in environmental controls design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of environmental controls construction tasks
- environmental controls construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of environmental controls • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of environmental controls • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of detailed design and documentation of environmental controls that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of environmental controls • consistent successful completion of the detailed design and documentation of environmental controls
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking the completion of the detailed design and documentation of environmental controls
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of detailed design and documentation of environmental controls that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the detailed design and documentation of environmental controls

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	• provision of clear and timely required support and advice on the completion of the detailed design and documentation of environmental controls
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice

Confirm may include:	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Environmental controls
may include:
	• the layout of:
	  • sediment controls
	  • noise controls
	  • dust controls
	  • visual controls
	• but does not include detailed design of the associated:
	  • surface drainage
	  • dams
	  • geotechnical works
	  • civil structures

Project requirements and information may include:	• project specifications • contractual requirements

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	• client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Detailed design may include:	• calculations, including:
	  • earthworks volumes
	  • construction and landscaping materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	• input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICWD505A Prepare detailed design of landscaping

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of landscaping in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of landscaping works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of landscaping within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of landscaping	1.1. relevant to the work activity 1.2. Identify and ***confirm*** the landscaping ***project requirements and information*** for the completion of the detailed ***landscaping*** design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of landscaping	2.1. Interpret and analyse the relevant data and identify the available viable options 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the landscaping that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed landscaping 2.5. Participate in the review of the landscaping design with peers and stakeholders 2.6. Complete the documentation of the landscaping design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of landscaping	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of landscaping	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous

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	improvements of landscaping detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of landscaping:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret environmental controls test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret landscaping design selection data
- determine landscaping design loadings or capacity requirements
- select landscaping design options
- size landscaping design components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer based design technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, flow rates, capacities, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design

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and documentation of landscaping:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- landscaping options
- landscaping geometric requirements
- landscaping surfacing requirements
- potential hazards, constraints and conditions that may affect landscaping design and construction
- current industry best practice in landscaping design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of landscaping construction tasks
- landscaping construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of landscaping • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of landscaping • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of landscaping that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of landscaping • consistent successful completion of the detailed design and documentation of landscaping
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking the completion of the detailed design and documentation of landscaping
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of landscaping that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the detailed design and documentation of landscaping • provision of clear and timely required support and advice on the detailed design and documentation of landscaping
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm may include:	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Landscaping may include:	• the layout of the landscaping but does not

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	include detailed design of the following: • vehicle pavements • vehicle pavement surface treatment • surface drainage • subsurface drainage • underground services • civil structures • lighting • environmental controls
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design may include:	• calculations, including:
	  • earthworks volumes
	  • construction and landscaping materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD506A Prepare detailed design of canals

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of canals in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of canals works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of canals within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of canals	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the canal's ***project requirements and information*** for the completion of the ***detailed design*** 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of canals	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of canals 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the detailed design of the canals that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed canals 2.5. Participate in the review of the canal designs with peers and stakeholders 2.6. Complete the documentation of the canal designs 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of canals	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of canals	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous

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	improvements of canal detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of canals:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret environmental controls test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret canal design selection data
- determine canal design loadings or capacity requirements
- select canal design options
- size canal design components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer based design technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, flow rates, capacities, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design

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and documentation of canals:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- canal design options
- canal bank protection options
- canal geometric requirements
- potential hazards, constraints and conditions that may affect canals design and construction
- current industry best practice in canals design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of canals construction tasks
- canal construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of canals • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of canals • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of canals that best meet the required outcomes • working with others to undertake and complete the completion of the detailed design and documentation of canals • consistent successful completion of the detailed design and documentation of canals
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of canals
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of canals that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the completion of the detailed design and documentation of canals • provision of clear and timely required support and advice on the completion of the detailed design and documentation of canals
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Detailed design	• calculations, including:

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may include:	• catchment areas • flow rates • earthworks volumes • construction materials and services quantities • construction cost estimates • drawings • risk assessment of: • the existing conditions • the application of the design • maintainability of the works • health, safety and environmental requirements • contribution to ancillary documentation, which may include: • design notes • construction notes • supplementary drawings • input to the specifications
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements
Preferred option factors may include:	• cost • site constraints • available resources • risk assessment of: • the existing conditions • the application of the design • maintainability of the completed works

Unit Sector(s)

Civil Works Design

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD507A Prepare detailed geotechnical design

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed geotechnical works design and documentation in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of geotechnical works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, to complete the detailed geotechnical works design and documentation within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of geotechnical works	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm the geotechnical works project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of geotechnical works	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of geotechnical works 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the geotechnical works that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed geotechnical works 2.5. Participate in the review of the geotechnical works design with peers and stakeholders 2.6. Complete the documentation of the geotechnical works design 2.7. Monitor and coordinate the progress of other team members involved in the design process to ensure the effective and efficient completion of the design 2.8. Gain design approval
3. Finalise design processes of geotechnical works	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems

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4. Support and review the application of the design of geotechnical works	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of geotechnical works detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed geotechnical works design and documentation:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret geotechnical works construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret geotechnical works selection data
- determine geotechnical works loadings
- select geotechnical works options
- size geotechnical works components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed geotechnical works design and documentation:

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- risk assessment and management requirement and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- geotechnical works options
- geotechnical works geometric requirements
- geotechnical works surfacing requirements
- potential hazards, constraints and conditions that may affect geotechnical works design and construction
- current industry best practice in geotechnical works design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of geotechnical works construction tasks
- geotechnical works plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed geotechnical works design and documentation • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed geotechnical works design and documentation • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of detailed geotechnical works design and documentation that best meet the required outcomes • completion of the detailed geotechnical works design and documentation • consistent successful completion of the detailed geotechnical works design and documentation
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed geotechnical works design and documentation
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of detailed geotechnical works design and documentation that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the completion of the detailed geotechnical works design and documentation • provision of clear and timely required support and advice on the detailed geotechnical works design and documentation
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Geotechnical works may include:	• slope stability • settlement control and repair • soil reinforcement
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints

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	• existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

Unit Sector(s)

Civil Works Design

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD508A Prepare detailed design of rural roads

Modification History

Not applicable.

Unit Descriptor

This unit covers the in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of rural roads works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of rural road layout within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of rural roads	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***rural roads project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources
2. Undertake the detailed design of rural roads	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of rural roads 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the rural roads that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed rural roads 2.5. Participate in the review of the rural roads design with peers and stakeholders 2.6. Complete the documentation of the rural roads design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of rural roads	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of rural roads	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of rural roads detailed

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	designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of rural road layout:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret rural roads construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret rural roads selection data
- determine rural roads loadings
- select rural roads options
- size rural roads components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of rural road layout:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- rural roads options
- rural roads geometric requirements
- rural roads surfacing requirements
- potential hazards, constraints and conditions that may affect rural roads design and construction
- current industry best practice in rural roads design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of rural roads construction tasks
- rural roads plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of rural road layout • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of rural road layout • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of rural road layout that best meet the required outcomes • working with others to undertake and complete the completion of the detailed design and documentation of rural road layout • consistent successful completion of the detailed design and documentation of rural road layout
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of rural road layout
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of rural road layout that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the detailed design and documentation of rural road layout • provision of clear and timely required support and advice on the detailed design and documentation of rural road layout
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Rural roads design
may include:
	• the layout of the roads but does not include detailed design of the following:
	  • pavement
	  • surface treatment
	  • traffic signals
	  • sub-surface drainage
	  • traffic management system
	  • underground services
	  • lighting
	  • environmental controls

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	• landscaping
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings

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	• input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD509A Prepare detailed design of urban roads

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of urban road layout in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of urban roads works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of urban road layout within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of urban roads	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***urban roads project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of urban roads	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of urban roads 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the urban roads that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed urban roads 2.5. Participate in the review of the urban roads design with peers and stakeholders 2.6. Complete the documentation of the urban roads design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of urban roads	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of urban roads	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous

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	improvements of urban roads detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of urban road layout:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret urban roads construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret urban roads selection data
- determine urban roads capacity requirements
- select urban roads options
- size urban roads components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of urban road layout:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- urban roads options
- urban roads geometric requirements
- urban roads surfacing requirements
- potential hazards, constraints and conditions that may effect urban roads design and construction
- current industry best practice in urban roads design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of urban roads construction tasks
- urban roads construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of urban road layout • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of urban road layout • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of urban road layout that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of urban road layout • consistent successful completion of the detailed design and documentation of urban road layout
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of urban road layout
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of urban road layout that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the detailed design and documentation of urban road layout • provision of clear and timely required support and advice on the detailed design and documentation of urban road layout
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Urban roads design
may include:
	• the layout of the roads but does not include detailed design of the following:
	  • pavement
	  • surface treatment
	  • traffic signals
	  • sub-surface drainage
	  • traffic management systems
	  • underground services
	  • civil structures
	  • lighting

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	• environmental controls • landscaping
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes

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	• supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD510A Prepare detailed design of busways

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of busway layout in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of busways works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of busway layout within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of busways	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***busways project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of busways	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of busways 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the busways that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed busways 2.5. Participate in the review of the busways design with peers and stakeholders 2.6. Complete the documentation of the busways design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of busways	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of busways	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and

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	recommend changes for the continuous improvements of busways detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of busway layout:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret busways construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret busways selection data
- determine busways capacity requirements
- select busways options
- size busways components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of busway layout:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- busways options
- busways geometric requirements
- busways surfacing requirements
- potential hazards, constraints and conditions that may effect busways design and construction
- current industry best practice in busways design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of busways construction tasks
- busways construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of busway layout • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of busway layout • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of busway layout that best meet the required outcomes • working with others to undertake and complete the completion of the detailed design and documentation of busway layout • consistent successful completion of the detailed design and documentation of busway layout
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of busway layout
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of busway layout that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the detailed design and documentation of busway layout • provision of clear and timely required support and advice on the detailed design and documentation of busway layout
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Busway design
may include:
	• the layout of the busway but does not include detailed design of the following:
	  • pavement
	  • surface treatment
	  • traffic signals
	  • sub-surface drainage
	  • traffic management systems
	  • underground services
	  • civil structures
	  • lighting

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	• environmental controls • landscaping
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes

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	• supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD511A Prepare detailed design of sub-divisions

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of sub-division layout in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of sub-divisions works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of sub-division layout within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of sub-divisions	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***sub-divisions project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of sub-divisions	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of sub-divisions 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the sub-divisions that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed sub-divisions 2.5. Participate in the review of the sub-divisions design with peers and stakeholders 2.6. Complete the documentation of the sub-divisions design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of sub-divisions	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of	4.1. Provide clarification and advice to those applying the design

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sub-divisions	4.2. Review the application of the design and recommend changes for the continuous improvements of sub-divisions detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of sub-division layout:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret sub-divisions construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret sub-divisions selection data
- select sub-divisions options
- size sub-divisions components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of sub-division layout:

- risk assessment and management requirement and procedures

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- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- sub-divisions options
- sub-divisions geometric requirements
- sub-divisions surfacing requirements
- potential hazards, constraints and conditions that may affect sub-divisions design and construction
- current industry best practice in sub-divisions design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of sub-divisions construction tasks
- sub-divisions construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of sub-division layout • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of sub-division layout • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of sub-division layout that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of sub-division layout Consistent successful completion of the detailed design and documentation of sub-division layout
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of sub-division layout
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of sub-division layout that best meet the required outcomes
	  • consistently achieving the required outcomes

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	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the detailed design and documentation of sub-division layout
	  • provision of clear and timely required support and advice on the detailed design and documentation of sub-division layout

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Sub-division design
may include:
	• urban sub-divisions
	• industrial sub-divisions
	• commercial sub-divisions
	• the layout of the sub-division but does not include detailed design of the following:
	  • pavement
	  • surface treatment
	  • traffic signals
	  • sub-surface drainage
	  • traffic management systems

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	• underground services • civil structures • lighting • environmental controls • landscaping
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:

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	• design notes • construction notes • supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD512A Prepare detailed design of motorways and interchanges

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of motorway and interchange layouts in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of motorways and interchanges works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of motorway and interchange layouts within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of motorways and interchanges	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***motorways and interchanges project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of motorways and interchanges	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of motorways and interchanges 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the motorways and interchanges that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed motorways and interchanges 2.5. Participate in the review of the motorways and interchanges design with peers and stakeholders 2.6. Complete the documentation of the motorways and interchanges design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of motorways and interchanges	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems

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4. Support and review the application of the design of motorways and interchanges	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of motorways and interchanges detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of motorway and interchange layouts:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret motorways and interchanges construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret motorways and interchanges selection data
- determine motorways and interchanges loadings and capacity requirements
- select motorways and interchanges options
- size motorways and interchanges components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of motorway and interchange layouts:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- motorways and interchanges options
- motorways and interchanges geometric requirements
- motorways and interchanges surfacing requirements
- potential hazards, constraints and conditions that may affect motorways and interchanges design and construction
- current industry best practice in motorways and interchanges design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of motorways and interchanges construction tasks
- motorways and interchanges construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of motorway and interchange layouts • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of motorway and interchange layouts • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of detailed design and documentation of motorway and interchange layouts that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of motorway and interchange layouts • consistent successful completion of the detailed design and documentation of motorway and interchange layouts
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of motorway and interchange layouts
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of detailed design and documentation of motorway and interchange layouts that best meet the required outcomes

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	• consistently achieving the required outcomes • first hand testimonial and documentary evidence of the candidate's: • working with others to undertake and complete the detailed design and documentation of motorway and interchange layouts • provision of clear and timely required support and advice on the detailed design and documentation of motorway and interchange layouts
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Motorways and interchanges design
may include:
	• the layout of the motorways and interchanges but does not include detailed design of the following:
	  • pavement
	  • surface treatment
	  • traffic signals
	  • sub-surface drainage
	  • traffic management systems
	  • underground services
	  • civil structures

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	• lighting • environmental controls • landscaping
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes

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	• construction notes • supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD513A Prepare detailed design of rail civil infrastructure

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of rail civil infrastructure layout in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of rail civil infrastructure works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of rail civil infrastructure layout within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of rail civil infrastructure	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***rail civil infrastructure project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of rail civil infrastructure	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of rail civil infrastructure 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the rail civil infrastructure that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed rail civil infrastructure 2.5. Participate in the review of the rail civil infrastructure design with peers and stakeholders 2.6. Complete the documentation of the rail civil infrastructure design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of rail civil infrastructure	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the	4.1. Provide clarification and advice to those

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application of the design of rail civil infrastructure	applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of rail civil infrastructure detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of rail civil infrastructure layout:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret rail civil infrastructure construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret rail civil infrastructure selection data
- determine rail civil infrastructure capacity requirements
- select rail civil infrastructure options
- size rail civil infrastructure components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of rail civil infrastructure layout:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- rail civil infrastructure options
- rail civil infrastructure geometric requirements
- rail civil infrastructure surfacing requirements
- potential hazards, constraints and conditions that may affect rail civil infrastructure design and construction
- current industry best practice in rail civil infrastructure design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of rail civil infrastructure construction tasks
- rail civil infrastructure construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of rail civil infrastructure layout • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of rail civil infrastructure layout • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of rail civil infrastructure layout that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of rail civil infrastructure layout • consistent successful completion of the detailed design and documentation of rail civil infrastructure layout
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of rail civil infrastructure layout
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of rail civil infrastructure layout that best meet the required outcomes
	  • consistently achieving the required

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	outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the detailed design and documentation of rail civil infrastructure layout
	  • provision of clear and timely required support and advice on the detailed design and documentation of rail civil infrastructure layout

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Rail civil infrastructure design
may include:
	• the layout of the rail civil infrastructure, including:
	  • line and grade
	  • track formations
	  • ballast
	  • sleepers
	  • rail joints
	  • rail fasteners
	  • turnouts and catchpoints
	  • diamond crossings

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	• level crossings
	• track surface drainage systems
	• it does not include detailed design of the following:
	  • capping
	  • ballast
	  • sleepers
	  • sub-surface drainage
	  • underground services
	  • civil structures
	  • lighting
	  • environmental controls
	  • landscaping

Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities

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	• construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD514A Prepare detailed design of dams

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of dam layouts in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of dam construction works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of dam layouts within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of dams	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***dam project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of dams	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of dams 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the dams that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed dams 2.5. Participate in the review of the dam design with peers and stakeholders 2.6. Complete the documentation of the dams design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of dams	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of dams	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous

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	improvements of dams detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of dam layouts:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret dam construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret dam options selection data
- determine dam loadings and capacity requirements
- select dam options
- size dam components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, flow rates, capacities, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design

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and documentation of dam layouts:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- dam options
- dam geometric requirements
- dam surfacing requirements
- potential hazards, constraints and conditions that may affect dams design and construction
- current industry best practice in dams design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of dams construction tasks
- dam construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of dam layouts • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of dam layouts • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of dam layouts that best meet the required outcomes • working with others to undertake and complete the completion of the detailed design and documentation of dam layouts • consistent successful completion of the detailed design and documentation of dam layouts
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of dam layouts
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of dam layouts that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the detailed design and documentation of dam layouts • provision of clear and timely required support and advice on the detailed design and documentation of dam layouts
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • catchment size and characteristics
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Dam design
may include:
	• coffer dams
	• water storage dams
	• silt and sediment control dams
	• tailings dams
	• it includes the layout of the dam and its spillways, but does not include detailed design of the following:
	  • the geotechnical design
	  • sub-surface drainage

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	• underground services • civil structures • environmental controls • landscaping
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • catchment areas
	  • flow rates
	  • dam capacity
	  • spillway requirements
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design

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	• maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD515A Prepare detailed design of airfield civil works

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of airfield civil works layout in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of airfield civil works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of airfield civil works layout within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of airfield civil works	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***airfield civil works project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of airfield civil works	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of airfield civil works 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the airfield civil works that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed airfield civil works 2.5. Participate in the review of the airfield civil works design with peers and stakeholders 2.6. Complete the documentation of the airfield civil works design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of airfield civil works	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of	4.1. Provide clarification and advice to those applying the design

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airfield civil works	4.2. Review the application of the design and recommend changes for the continuous improvements of airfield civil works detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of airfield civil works layout:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret airfield civil works construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret airfield civil works layout selection data
- determine airfield civil works capacity requirements
- select airfield civil works layout options
- size airfield civil works components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of airfield civil works layout:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- airfield civil works layout options
- airfield civil works geometric requirements
- airfield civil works surfacing requirements
- potential hazards, constraints and conditions that may affect airfield civil works design and construction
- current industry best practice in airfield civil works design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of airfield civil works construction tasks
- airfield civil works construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of airfield civil works layout • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of airfield civil works layout • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of airfield civil works layout that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of airfield civil works layout • consistent successful completion of the detailed design and documentation of airfield civil works layout
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of airfield civil works layout
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of airfield civil works layout that best meet the required outcomes
	  • consistently achieving the required

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	outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the detailed design and documentation of airfield civil works layout
	  • provision of clear and timely required support and advice on the detailed design and documentation of airfield civil works layout

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Airfield civil works design
may include:
	• the layout of the airfield civil works, including:
	  • runways
	  • taxiways
	  • parking areas
	  • vehicle roadways
	• but does not include detailed design of the following:
	  • pavement
	  • surface treatment
	  • sub-surface drainage

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	• underground services • civil structures • lighting • environmental controls • landscaping
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:

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	• design notes • construction notes • supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD516A Prepare detailed design of bicycle ways

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of bicycle ways in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of bicycle ways works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of bicycle ways within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of bicycle ways	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***bicycle ways project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of bicycle ways	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of bicycle ways 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the bicycle ways that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed bicycle ways 2.5. Participate in the review of the bicycle ways design with peers and stakeholders 2.6. Complete the documentation of the bicycle ways design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of bicycle ways	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of bicycle ways	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous

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	improvements of bicycle ways detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of bicycle ways:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret bicycle ways construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret bicycle ways selection data
- determine bicycle ways capacity requirements
- select bicycle ways options
- size bicycle ways components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of bicycle ways:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- bicycle ways options
- bicycle ways geometric requirements
- bicycle ways surfacing requirements
- potential hazards, constraints and conditions that may affect bicycle ways design and construction
- current industry best practice in bicycle ways design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of bicycle ways construction tasks
- bicycle ways construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of bicycle ways • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of bicycle ways • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of bicycle ways that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of bicycle ways • consistent successful completion of the detailed design and documentation of bicycle ways
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of bicycle ways
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of bicycle ways that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the detailed design and documentation of bicycle ways • provision of clear and timely required support and advice on the completion of the detailed design and documentation of bicycle ways
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Confirm may include:	• consultation with the client • consultation with others within the organisation • consultation with relevant authorities • conducting a risk assessment of the existing and potential hazards • obtaining further site data, including: • known and potential hazards, constraints and conditions • cultural and heritage data • geological data • geotechnical data • hydrological data • survey data • meteorological data

Bicycle ways design
may include:
	• the layout of the bicycle way, but does not include detailed design of the following:
	  • pavement
	  • surface treatment
	  • sub-surface drainage
	  • underground services
	  • civil structures
	  • lighting
	  • environmental controls
	  • landscaping

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Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD517A Prepare detailed design of industrial hardstands

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of industrial hardstands in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of industrial hardstands works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of industrial hardstands within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of industrial hardstands	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***industrial hardstands project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of industrial hardstands	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of industrial hardstands 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the industrial hardstands that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed industrial hardstands 2.5. Participate in the review of the industrial hardstands design with peers and stakeholders 2.6. Complete the documentation of the industrial hardstands design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of industrial hardstands	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the	4.1. Provide clarification and advice to those

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application of the design of industrial hardstands	applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of industrial hardstands detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of industrial hardstands:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret industrial hardstands construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret industrial hardstands selection data
- determine industrial hardstands capacity requirements
- select industrial hardstands options
- size industrial hardstands components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of industrial hardstands:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- industrial hardstands options
- industrial hardstands geometric requirements
- industrial hardstands surfacing requirements
- potential hazards, constraints and conditions that may affect industrial hardstands design and construction
- current industry best practice in industrial hardstands design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of industrial hardstands construction tasks
- industrial hardstands construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of industrial hardstands • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of industrial hardstands • the identification of the relevant information and scope of the work required to meet the required outcomes • the detailed design and documentation of industrial hardstands that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of industrial hardstands • consistent successful completion of the detailed design and documentation of industrial hardstands
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the the detailed design and documentation of industrial hardstands
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of detailed design and documentation of industrial hardstands that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary

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	evidence of the candidate's: • working with others to undertake and complete the detailed design and documentation of industrial hardstands • provision of clear and timely required support and advice on the completion of the detailed design and documentation of industrial hardstands
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Industrial hardstands design
may include:
	• the layout of the industrial hardstands but does not include detailed design of the following:
	  • pavement
	  • surface treatment
	  • traffic signals
	  • sub-surface drainage
	  • traffic management systems
	  • underground services
	  • civil structures
	  • lighting

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	• environmental controls • landscaping
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes

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	• supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD518A Prepare detailed design of open car parks

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of open car parks in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of open car parks works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of open car parks within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of open car parks	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***open car parks project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of open car parks	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of open car parks 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the open car parks that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed open car parks 2.5. Participate in the review of the open car parks design with peers and stakeholders 2.6. Complete the documentation of the open car parks design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of open car parks	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of open car parks	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and

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	recommend changes for the continuous improvements of open car parks detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of open car parks:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret open car parks construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret open car parks selection data
- determine open car parks capacity requirements
- select open car parks options
- size open car parks components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of open car parks:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- open car parks options
- open car parks geometric requirements
- open car parks surfacing requirements
- potential hazards, constraints and conditions that may affect open car parks design and construction
- current industry best practice in open car parks design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of open car parks construction tasks
- open car parks construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of open car parks • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of open car parks • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of open car parks that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of open car parks • consistent successful completion of the detailed design and documentation of open car parks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of open car parks
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of open car parks that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the detailed design and documentation of open car parks • provision of clear and timely required support and advice on the detailed design and documentation of open car parks
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Open car parks design
may include:
	• the layout of the open car parks but does not include detailed design of the following:
	  • pavement
	  • surface treatment
	  • traffic signals
	  • sub-surface drainage
	  • traffic management systems
	  • underground services
	  • civil structures
	  • lighting

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	• environmental controls • landscaping
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes

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	• supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD519A Prepare detailed design of inter modal facilities civil works

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of intermodal facilities civil works in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of intermodal facilities civil works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of intermodal facilities civil works within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of intermodal facilities civil works	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***intermodal facilities civil works project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of intermodal facilities civil works	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of intermodal facilities civil works 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the intermodal facilities civil works 2.4. Prepare a cost estimate of the execution of the designed intermodal facilities civil works 2.5. Participate in the review of the intermodal facilities civil works design with peers and stakeholders 2.6. Complete the documentation of the intermodal facilities civil works 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of intermodal facilities civil works	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the	4.1. Provide clarification and advice to those

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application of the design of intermodal facilities civil works	applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of intermodal facilities civil works 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of intermodal facilities civil works:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret intermodal facilities civil works construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret intermodal facilities civil works selection data
- determine intermodal facilities civil works capacity requirements
- select intermodal facilities civil works options
- size intermodal facilities civil works components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of intermodal facilities civil works:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- intermodal facilities civil works options
- intermodal facilities civil works geometric requirements
- intermodal facilities civil works surfacing requirements
- potential hazards, constraints and conditions that may affect intermodal facilities civil works design and construction
- current industry best practice in intermodal facilities civil works design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of intermodal facilities civil works construction tasks
- intermodal facilities civil works construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of intermodal facilities civil works • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of intermodal facilities civil works • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of intermodal facilities civil works that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of intermodal facilities civil works • consistent successful completion of the detailed design and documentation of intermodal facilities civil works
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of intermodal facilities civil works
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of intermodal facilities civil works that best meet the required outcomes
	  • consistently achieving the required

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	outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the detailed design and documentation of intermodal facilities civil works
	  • provision of clear and timely required support and advice on the completion of the detailed design and documentation of intermodal facilities civil works

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Intermodal facilities civil works design
may include:
	• the layout of the intermodal facilities civil works but does not include detailed design of the following:
	  • pavement
	  • surface treatment
	  • traffic signals
	  • sub-surface drainage
	  • traffic management systems
	  • underground services
	  • civil structures

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	• lighting • environmental controls • landscaping
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes

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	• construction notes • supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD520A Prepare detailed design of rigid pavements

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of rigid pavement in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of rigid pavement works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of rigid pavement within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of rigid pavement	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***rigid pavement project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of rigid pavement	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of rigid pavement 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the rigid pavement that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed rigid pavement 2.5. Participate in the review of the rigid pavement design with peers and stakeholders 2.6. Complete the documentation of the rigid pavement design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of rigid pavement	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of	4.1. Provide clarification and advice to those applying the design

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rigid pavement	4.2. Review the application of the design and recommend changes for the continuous improvements of rigid pavement detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of rigid pavement:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret rigid pavement construction materials test results
- interpret meteorological data
- carry out risk assessments
- interpret rigid pavement selection data
- select rigid pavement options
- determine rigid pavement loadings requirements
- apply concrete mix design principles
- size rigid pavement components
- choose appropriate construction techniques
- provide leadership and coordination
- develop and apply design plans
- apply computer based design technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, grades, loads and stresses
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of rigid pavement:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- rigid pavement options
- rigid pavement geometric requirements
- rigid pavement reinforcement requirements
- rigid pavement surfacing requirements
- potential hazards, constraints and conditions that may affect rigid pavement design and construction
- current industry best practice in rigid pavement design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of rigid pavement construction tasks
- rigid pavement construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of rigid pavement • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of rigid pavement • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of rigid pavement that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of rigid pavement • consistent successful completion of the detailed design and documentation of rigid pavement
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of rigid pavement
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of rigid pavement that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the detailed design and documentation of rigid pavement • provision of clear and timely required support and advice on the detailed design and documentation of rigid pavement
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Rigid pavement may include their application in:	• roads • open car parks • industrial hardstands • airfields
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data

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	• project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • pavement loading
	  • pavement stresses
	  • reinforcement requirements
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	• design notes
	• construction notes
	• supplementary drawings
	• input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD521A Prepare detailed design of flexible pavements

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of flexible pavement in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of flexible pavement works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of flexible pavement within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of flexible pavement	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the flexible pavement ***project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of flexible pavement	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of flexible pavement 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the flexible pavement that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed flexible pavement 2.5. Participate in the review of the flexible pavement design with peers and stakeholders 2.6. Complete the documentation of the flexible pavement design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of flexible pavement	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of	4.1. Provide clarification and advice to those applying the design

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flexible pavement	4.2. Review the application of the design and recommend changes for the continuous improvements of flexible pavement 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of flexible pavement:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret geotechnical information
- interpret flexible pavement construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret flexible pavement selection data
- determine flexible pavement loadings requirements
- select flexible pavement options
- size flexible pavement components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer based design technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, density, mass, grades, loads and stresses
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of flexible pavement:

- risk assessment and management requirement and procedures

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- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- flexible pavement options
- flexible pavement geometric requirements
- flexible pavement surfacing requirements
- potential hazards, constraints and conditions affecting flexible pavement design and construction
- current industry best practice in flexible pavement design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques for the execution of flexible pavement construction tasks
- flexible pavement construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of flexible pavement • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of flexible pavement • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of flexible pavement that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of flexible pavement • consistent successful completion of the detailed design and documentation of flexible pavement
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of flexible pavement
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of detailed design and documentation of flexible pavement that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the detailed design and documentation of flexible pavement • provision of clear and timely required support and advice on the completion of the detailed design and documentation of flexible pavement
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Flexible pavement may include their application in:	• roads • open car parks • industrial hardstands • airfields • recreational facilities
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data

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	• project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • pavement loading
	  • pavement stresses
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD522A Prepare stabilised material mix design

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the design and documentation of stabilised materials mix in Civil Construction. It includes the preparation and planning for the detailed, undertaking of the design, finalisation of the design processes and supporting the application of the design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, design options and solutions and specifications required for the completion of stabilised materials mix design, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the design and documentation of stabilised materials mix within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for stabilised materials mix design	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the stabilised materials mix design ***project requirements and information*** for the completion of the design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the stabilised materials mix design	2.1. Interpret and analyse the relevant data and identify the available viable options for the stabilised materials mix design 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the stabilised materials mix ***design*** that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed stabilised materials mix 2.5. Participate in the review of the stabilised materials mix design with peers and stakeholders 2.6. Complete the documentation of the stabilised materials mix design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise stabilised materials mix design	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the	4.1. Provide clarification and advice to those

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application of the stabilised materials mix design	applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of stabilised materials mix designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the design and documentation of stabilised materials mix:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret stabilised materials construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret stabilised materials mix design selection data
- determine stabilised materials mix design loadings requirements
- select stabilised materials mix design options
- size stabilised materials mix design components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, density, mass, grades, loads and stresses
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the design and documentation of stabilised materials mix:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- stabilised materials binder characteristics
- stabilised materials mix design options
- stabilised materials mix design geometric requirements
- stabilised materials mix design surfacing requirements
- potential hazards, constraints and conditions that may affect stabilised materials mix design and construction
- current industry best practice in stabilised materials mix design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of stabilised materials construction tasks
- stabilised materials works construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the design and documentation of stabilised materials mix • implementation of procedures and techniques for the safe, effective and efficient completion of the design and documentation of stabilised materials mix • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the design and documentation of stabilised materials mix that best meet the required outcomes • working with others to undertake and complete the design and documentation of stabilised materials mix • consistent successful completion of the design and documentation of stabilised materials mix
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the design and documentation of stabilised materials mix
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the design and documentation of stabilised materials mix that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the design and documentation of stabilised materials mix • provision of clear and timely required support and advice on the completion of the design and documentation of stabilised materials mix
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Stabilised materials mix design may include their application in:	• roads • open car parks • industrial hardstands • airfields
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data

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	• project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • pavement loading
	  • pavement stresses
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD523A Prepare asphalt mix design

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the design and documentation of asphalt mixes in Civil Construction. It includes the preparation and planning for the design, undertaking of the design, finalisation of the design processes and supporting the application of the design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of asphalt mix manufacture, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the design and documentation of asphalt mixes within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the asphalt mix design	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the asphalt mix ***project requirements and information*** for the completion of the design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the asphalt mix design	2.1. Interpret and analyse the relevant data and identify the available viable options for the asphalt mix design 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***design*** of the asphalt mix that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed asphalt mix 2.5. Participate in the review of the asphalt mix design with peers and stakeholders 2.6. Complete the documentation of the asphalt mix design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of asphalt mix design	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the asphalt mix design	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous

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	improvements of asphalt mix designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the design and documentation of asphalt mixes:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret asphalt materials and product test results
- interpret meteorological data
- carry out risk assessments
- interpret asphalt mix selection data
- interpret traffic data
- determine asphalt mix traffic category and loadings requirements
- select of asphalt mix design options
- proportion asphalt mix design components
- provide leadership and coordination
- choosing appropriate operational techniques
- develop and apply design plans
- apply computer based design technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate of areas, volumes, density, mass, grades, loads and stresses
- apply mix design procedures, such as marshall and hubbard-field
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the design and

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documentation of asphalt mixes:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures, including materials and product sampling and testing requirements
- asphalt laboratory procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- asphalt mix design options
- potential hazards, constraints and conditions that may affect asphalt mix design and construction
- current industry best practice in asphalt mix design and construction
- traffic category application in asphalt mix design
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of asphalt construction tasks
- asphalt mix manufacture and construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the design and documentation of asphalt mixes • implementation of procedures and techniques for the safe, effective and efficient completion of the design and documentation of asphalt mixes • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the design and documentation of asphalt mixes that best meet the required outcomes • working with others to undertake and complete the design and documentation of asphalt mixes • consistent successful completion of the design and documentation of asphalt mixes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the design and documentation of asphalt mixes
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the design and documentation of asphalt mixes that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the design and documentation of asphalt mixes • provision of clear and timely required support and advice on the completion of the design and documentation of asphalt mixes
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • mix materials data
	  • hydrological data
	  • survey data
	  • meteorological data

Asphalt mixes may include their application in:	• urban and rural roads • car parks • industrial hardstands • airfields • recreational facilities • urban and rural pathways
Project requirements and information	• project specifications • contractual requirements • client's requirements

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may include:	• project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • pavement loading
	  • pavement stresses
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD524B Prepare design of sprayed seal surfacing

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of and documentation of sprayed seal surfacing design in Civil Construction. It includes the preparation and planning for the design, undertaking of the design, finalisation of the design processes and supporting the application of the design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of sprayed seal surfacing works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of and documentation of sprayed seal surfacing design within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the design of sprayed seal surfacing	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***sprayed seal surfacing project requirements and information*** for the completion of the design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirement
2. Undertake the design of sprayed seal surfacing	2.1. Interpret and analyse the relevant data and identify the available viable options for the design of sprayed seal surfacing 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***design*** of the sprayed seal surfacing that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed sprayed seal surfacing 2.5. Participate in the review of the sprayed seal surfacing design 2.6. Complete the documentation of the sprayed seal surfacing design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of sprayed seal surfacing	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of	4.1. Provide clarification and advice to those applying the design

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sprayed seal surfacing	4.2. Review the application of the design and recommend changes for the continuous improvements of sprayed seal surfacing designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete and documentation of sprayed seal surfacing design:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret sprayed seal surfacing materials test results
- interpret meteorological data
- interpret traffic data
- carry out risk assessments
- interpret sprayed seal surfacing selection data
- determine traffic category to be used in sprayed seal surfacing design
- select sprayed seal surfacing options
- apply binder selection criteria, (including bitumen, bituminous emulsion and polymer modified binders)
- determine binder application rates and aggregate spread rates
- apply requirements for the preparation of pavements for surfacing
- provide leadership and coordination
- develop and apply design plans
- calculate of design traffic volumes, density, mass, grades, loads and stresses
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques
-

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete and documentation of sprayed seal surfacing design:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- traffic category application in sprayed seal surfacing designs
- sprayed seal surfacing options
- potential hazards, constraints and conditions that may affect sprayed seal surfacing design and construction
- current industry best practice in sprayed seal surfacing design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of sprayed seal surfacing construction tasks
- sprayed seal surfacing plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of and documentation of sprayed seal surfacing design • implementation of procedures and techniques for the safe, effective and efficient completion of and documentation of sprayed seal surfacing design • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of sprayed seal surfacing design that best meet the required outcomes • working with others to undertake and complete the documentation of sprayed seal surfacing design • consistent successful completion of and documentation of sprayed seal surfacing design
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of and documentation of sprayed seal surfacing design
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of sprayed seal surfacing design that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and

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	complete the documentation of sprayed seal surfacing design • provision of clear and timely required support and advice on the completion of and documentation of sprayed seal surfacing design
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • traffic data
	  • surface texture and condition of existing pavements
	  • pavement geometry
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Sprayed seal surfacing may include:	• bitumen, including multigrade bitumen • polymer modified binders • bituminous emulsions • various aggregate sizes
Sprayed seal surfacing application may include:	• new installations and maintenance of existing pavements

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	• urban and rural roads • bridges • car parks • industrial hardstands • airfields • recreational facilities • urban and rural pathways
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • pavement loading
	  • pavement stresses
	  • traffic volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design

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	• maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD525B Select pavement surfacing

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the selection and documentation of pavement surfacing in Civil Construction. It includes the preparation and planning for the selection, undertaking of the selection, finalisation of the selection processes and supporting the application of the selection.

Application of the Unit

This unit requires the identification of selection inputs, production of calculations, drawings, selection options and solutions and specifications required for the completion of pavement surfacing works, it does not include the certification of the selection. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the selection and documentation of pavement surfacing within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the selection of pavement surfacing	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***pavement surfacing project requirements and information*** for the completion of the selection 1.3. Prepare a ***selection plan*** which makes best use of the available resources and meets the selection requirements
2. Undertake the selection of pavement surfacing	2.1. Interpret and analyse the relevant data and identify the available viable options for the selection of pavement surfacing 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***selection*** of the pavement surfacing that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the selected pavement surfacing 2.5. Participate in the review of the pavement surfacing selection with peers and stakeholders 2.6. Complete the documentation of the pavement surfacing selection 2.7. Monitor and coordinate the progress of other team members involved in the selection process 2.8. Gain selection approval
3. Finalise selection processes of pavement surfacing	3.1. Ensure filing of selection records is completed 3.2. Complete and submit selection cost and other reporting 3.3. Participate in performance review of the selection process 3.4. Seek client feedback and contribute to the verification of the selection 3.5. Close out all systems
4. Support and review the	4.1. Provide clarification and advice to those

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application of the selection of pavement surfacing	applying the selection 4.2. Review the application of the selection and recommend changes for the continuous improvements of pavement surfacing selections 4.3. Contribute to the validation of the selection

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the selection and documentation of pavement surfacing:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret selection briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret pavement surfacing materials and product test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret pavement surfacing selection data
- determine pavement surfacing loadings and capacity requirements
- select pavement surfacing options
- determine traffic category to be used in pavement surfacing selection and design
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply selection plans
- calculate of areas, volumes, density, mass, grades, loads and stresses
- maintain selection cost records
- maintain selection records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the selection and documentation of pavement surfacing:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures

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- road safety issues, requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- community expectations
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational selection procedures and practice
- pavement surfacing options and their characteristics
- potential hazards, constraints and conditions that may affect pavement surfacing selection and construction
- current industry best practice in pavement surfacing selection and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of pavement surfacing construction tasks
- pavement surfacing construction plant and equipment capabilities
- cost estimation techniques
- selection review principles and procedures
- documentation requirements
- reporting requirements and procedures
- selection approval requirements and procedures
- selection records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- existing pavement assessment requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the selection and documentation of pavement surfacing • implementation of procedures and techniques for the safe, effective and efficient completion of the selection and documentation of pavement surfacing • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of documentation of pavement surfacing that best meet the required outcomes • working with others to undertake and complete the selection and documentation of pavement surfacing • consistent successful completion of the selection and documentation of pavement surfacing
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the selection and documentation of pavement surfacing
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of documentation of pavement surfacing that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the selection and documentation of pavement surfacing • provision of clear and timely required support and advice on the completion of the selection and documentation of pavement surfacing
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Pavement surfacing may include:	• sprayed sealing • asphalt • cold mix • slurry and micro-surfacing
Pavement surfacing may include its application on:	• new pavement construction • existing pavement maintenance and rehabilitation • motorways, rural and urban roads • bridges • car parks

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	• industrial hardstands • airfields • recreational facilities • urban and rural pathways
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Selection plan may include:	• human resource requirements • selection hardware and software • coordination requirements • scheduling • review requirements • selection process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Selection
may include:
	• calculations, including:
	  • pavement loading
	  • pavement stresses
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the selection, and
	  • maintainability of the works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:

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	• selection notes • construction notes • supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD526A Prepare detailed traffic analysis

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed traffic analysis and documentation of that analysis in Civil Construction. It includes the preparation and planning for the detailed analysis, undertaking of the detailed analysis, finalisation of the detailed analysis processes and supporting the application of the detailed analysis.

Application of the Unit

This unit requires the identification of analysis inputs, production of calculations, drawings, analysis options and solutions and specifications required for the completion of works associated with the analysis, it does not include the certification of the analysis. This unit is appropriate for those working in a management role or as a technical specialist, for the completion and documentation of the detailed traffic analysis within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Completion and documentation of the detailed traffic analysis	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***traffic analysis project requirements and information*** for the completion of the detailed analysis 1.3. Prepare an ***analysis plan*** which makes best use of the available resources and meets the analysis requirements
2. Undertake the detailed traffic analysis	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed traffic analysis 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed traffic analysis*** that safely, effectively and efficiently meets the required project outcomes 2.4. Participate in the review of the traffic analysis with peers and stakeholders 2.5. Complete the documentation of the traffic analysis 2.6. Monitor and coordinate the progress of other team members involved in the analysis process 2.7. Gain analysis approval
3. Finalise detailed traffic analysis processes	3.1. Ensure filing of analysis records is completed 3.2. Complete and submit analysis cost and other reporting 3.3. Participate in performance review of the analysis process 3.4. Seek client feedback and contribute to the verification of the analysis 3.5. Close out all systems
4. Support and review the application of the traffic analysis	4.1. Provide clarification and advice to those applying the analysis 4.2. Review the application of the analysis and recommend changes for the continuous improvements of traffic detailed analysis 4.3. Contribute to the validation of the analysis

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete and document the detailed traffic analysis:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret analysis briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret meteorological data
- carry out risk assessments
- interpret traffic analysis data
- determine traffic capacity requirements
- provide leadership and coordination
- choose appropriate analysis techniques
- develop and apply analysis plans
- apply computer based analysis technology
- apply industry or government standard analysis software
- apply engineering graphical presentation techniques
- calculate of flow rates, level of service, capacities and percentages
- maintain analysis cost records
- maintain analysis records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete and document the detailed traffic analysis:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- cultural and heritage requirements and procedures
- communication requirements and procedures

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- Australian and other relevant standards requirements and procedures
- industry and organisational analysis procedures and practice
- current industry best practice
- traffic analysis options
- potential hazards, constraints and conditions that may affect traffic analysis
- current industry best practice in traffic analysis
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of traffic construction tasks
- traffic analysis review principles and procedures
- documentation requirements
- reporting requirements and procedures
- traffic analysis approval requirements and procedures
- traffic analysis records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion and documentation of the detailed traffic analysis • implementation of procedures and techniques for the safe, effective and efficient completion and documentation of the detailed traffic analysis • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of he detailed traffic analysis that best meet the required outcomes • working with others to undertake and complete the and document the detailed traffic analysis • consistent successful completion and documentation of the detailed traffic analysis
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion and documentation of the detailed traffic analysis
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed traffic analysis that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the documentation of the detailed

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	traffic analysis • provision of clear and timely required support and advice on the completion and documentation of the detailed traffic analysis
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards that may affect the data collection process
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Traffic analysis may include its application for:	• roads • car parks • industrial hardstands
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data

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	• project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Analysis plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the analysis
	  • maintainability of the completed works

Detailed traffic analysis
may include:
	• calculations, including:
	  • level of service
	  • capacity
	• drawings(or sketches)
	• risk assessment of:
	  • the existing conditions
	  • the conduct of the analysis
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • analysis notes
	  • supplementary drawings
	  • outcomes and recommendations

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICWD527A Prepare detailed design of traffic signals

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of traffic signals in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of traffic signals works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of traffic signals within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of traffic signals	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***traffic signals project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of traffic signals	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of traffic signals 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the traffic signals that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed traffic signals 2.5. Participate in the review of the traffic signals design with peers and stakeholders 2.6. Complete the documentation of the traffic signals design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of traffic signals	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of traffic signals	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and

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	recommend changes for the continuous improvements of traffic signals detailed designs, 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of traffic signals:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret traffic signals selection data
- interpret traffic management systems
- determine traffic signals traffic capacity requirements
- select traffic signals options
- size traffic signals components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate of flow rates, level of service, capacities and percentages
- maintain design cost records
- maintain design records
- provide clarification and advice applying client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of traffic signals:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures

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- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- traffic signals options
- traffic signals geometric requirements
- potential hazards, constraints and conditions that may affect traffic signals design and construction
- current industry best practice in traffic signals design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of traffic signals construction tasks
- traffic signals construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of traffic signals • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of traffic signals • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of traffic signals that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of traffic signals • consistent successful completion of the detailed design and documentation of traffic signals
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of traffic signals
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of traffic signals that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and

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	complete the detailed design and documentation of traffic signals • provision of clear and timely required support and advice on the detailed design and documentation of traffic signals
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Traffic signals
may include their application for:
	• roads
	• car parks
	• industrial hardstands
	• the layout of the traffic signals but does not include detailed design of the following:
	  • civil structures
	  • lighting
	  • environmental controls
	  • landscaping

Project requirements and	• project specifications

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information may include:	• contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • level of service
	  • capacity
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD528A Prepare detailed design of traffic management systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of traffic management systems in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of traffic management systems works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of traffic management systems within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of traffic management systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***traffic management systems project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of traffic management systems	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of traffic management systems 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the traffic management systems that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed traffic management systems 2.5. Participate in the review of the traffic management systems design with peers and stakeholders 2.6. Complete the documentation of the traffic management systems design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of traffic management systems	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems

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4. Support and review the application of the design of traffic management systems	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of traffic management systems detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of traffic management systems:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret traffic analysis data
- determine traffic management systems capacity requirements
- select traffic management systems options
- size traffic management systems components
- provide leadership and coordination
- choose appropriate implementation techniques
- develop and apply design plans
- apply computer based design technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate of flow rates, level of service, capacities and percentages
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of traffic management systems:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures

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- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- principles of road user behaviour
- current industry best practice
- traffic management systems options
- traffic management systems geometric requirements
- potential hazards, constraints and conditions that may affect traffic management systems design and implementation
- current industry best practice in traffic management systems design and implementation
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of traffic management systems implementation tasks
- traffic management systems implementation structures capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of traffic management systems • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of traffic management systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of traffic management systems that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of traffic management systems • consistent successful completion of the detailed design and documentation of traffic management systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of traffic management systems
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of traffic management systems that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary

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	evidence of the candidate's: • working with others to undertake and complete the detailed design and documentation of traffic management systems • provision of clear and timely required support and advice on the detailed design and documentation of traffic management systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Traffic management systems
may include their application for:
	• roads
	• car parks
	• industrial hardstands
	• the layout of the traffic management systems but does not include detailed design of the following:
	  • pavement
	  • surface treatment
	  • traffic signals
	  • sub-surface drainage

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	• underground services • civil structures • lighting • environmental controls • landscaping
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • level of service
	  • capacity
	  • construction materials and services quantities
	  • construction cost estimates
	• selection and specification of traffic management structures and systems, including:
	  • roundabouts
	  • mediums
	  • entry and exit lanes
	  • merging lanes

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	• traffic barriers • line marking requirements • traffic speed limits • traffic signals • warning signs • drawings • risk assessment of: • the existing conditions • the application of the design • maintainability of the completed works • health, safety and environmental requirements • contribution to ancillary documentation, which may include: • design notes • construction notes • supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD529A Prepare detailed design of underground services

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of underground services in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of underground services works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of underground services within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of underground services	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***underground services project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of underground services	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of underground services 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the underground services that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed underground services 2.5. Participate in the review of the underground services design with peers and stakeholders 2.6. Complete the documentation of the underground services design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of underground services	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the	4.1. Provide clarification and advice to those

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application of the design of underground services	applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of underground services detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of underground services:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret underground services construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret underground services options selection data
- determine underground services capacity requirements
- select underground services options
- size underground services components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of underground services:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- underground services options
- underground services geometric requirements
- underground services surfacing requirements
- potential hazards, constraints and conditions that may affect underground services design and construction
- trench and pit shoring requirements
- current industry best practice in underground services design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of underground services construction tasks
- underground services construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of underground services • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of underground services • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of underground services that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of underground services • consistent successful completion of the detailed design and documentation of underground services
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of underground services
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of underground services that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary

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	evidence of the candidate's: • working with others to undertake and complete the detailed design and documentation of underground services • provision of clear and timely required support and advice on the completion of the detailed design and documentation of underground services
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Underground services
may include:
	• the layout of the following:
	  • water mains pipelines
	  • gas pipelines
	  • other conduits, for services such as:
	  • telecommunication cables
	  • data cables
	  • power cables
	• but does not include detailed design of the following sub-surface drainage works:
	  • stormwater
	  • sewerage

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Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD530A Prepare detailed design of surface drainage

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of surface drainage in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of surface drainage works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of surface drainage within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of surface drainage	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***surface drainage project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of surface drainage	2.1. Interpret and analyse the relevant data and identify the available viable options for the ***detailed design*** of surface drainage 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Prepare a cost estimate of the execution of the designed surface drainage 2.4. Participate in the review of the surface drainage design with peers and stakeholders 2.5. Complete the documentation of the surface drainage design 2.6. Monitor and coordinate the progress of other team members involved in the design process 2.7. Gain design approval
3. Finalise design processes of surface drainage	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of surface drainage	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of surface drainage detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of surface drainage:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret meteorological data
- interpret geotechnical information
- interpret cultural and heritage data
- carry out risk assessments
- interpret surface drainage design data
- identify and analyse catchments
- interpret and apply rainfall and runoff data
- estimate surface drainage design flows
- solve channel flow problems
- select of surface drainage options
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer based design technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate of areas, volumes, flow rates, capacities, densities, mass and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design

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and documentation of surface drainage:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- surface drainage options
- surface drainage geometric requirements
- surface drainage surfacing requirements
- potential hazards, constraints and conditions that may affect surface drainage design and construction
- current industry best practice in surface drainage design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of surface drainage construction tasks
- surface drainage construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of surface drainage • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of surface drainage • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of detailed design and documentation of surface drainage that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of surface drainage • consistent successful completion of the detailed design and documentation of surface drainage
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of surface drainage
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of surface drainage that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and

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	complete the detailed design and documentation of surface drainage • provision of clear and timely required support and advice on the completion of the detailed design and documentation of surface drainage
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Surface drainage may include:	• graded surfaces • open channels, surfaced with: • natural materials, wear resistant materials • kerb and guttering • erosion control structures
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data

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	• project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • catchment areas
	  • flow rates
	  • channel capacities
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD531A Prepare detailed design of subsurface drainage

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of subsurface drainage in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of subsurface drainage works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of subsurface drainage within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of subsurface drainage	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***subsurface drainage project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of subsurface drainage	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of subsurface drainage 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the subsurface drainage that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed subsurface drainage 2.5. Participate in the review of the subsurface drainage design with peers and stakeholders 2.6. Complete the documentation of the subsurface drainage design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of subsurface drainage	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of	4.1. Provide clarification and advice to those applying the design

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subsurface drainage	4.2. Review the application of the design and recommend changes for the continuous improvements of subsurface drainage detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of subsurface drainage:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret subsurface drainage design data
- identify and analyse catchments
- interpret and apply rainfall and runoff data
- estimate subsurface drainage design flows
- solve pipe flow problems and sizing of subsurface drainage components
- design storm water and sewerage drainage systems
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer based design technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate of areas, volumes, flow rates, capacities, densities, mass and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design

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and documentation of subsurface drainage:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- subsurface drainage options
- subsurface drainage geometric requirements
- subsurface drainage surfacing requirements
- potential hazards, constraints and conditions that may affect subsurface drainage design and construction
- trench and pit shoring requirements
- current industry best practice in subsurface drainage design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of subsurface drainage construction tasks
- subsurface drainage construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of subsurface drainage • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of subsurface drainage • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of subsurface drainage that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of subsurface drainage • consistent successful completion of the detailed design and documentation of subsurface drainage
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of subsurface drainage
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of subsurface drainage that best meet the required outcomes
	  • consistently achieving the required

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	outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the detailed design and documentation of subsurface drainage
	  • provision of clear and timely required support and advice on the completion of the detailed design and documentation of subsurface drainage

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Subsurface drainage
may include:
	• the layout and sizing of:
	  • culverts
	  • drainage pits
	  • stormwater drainage systems
	  • sewerage drainage systems
	  • subsoil drainage systems
	• but does not include detailed design of associated civil structures

Project requirements and	• project specifications • contractual requirements

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information may include:	• client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • catchment areas
	  • flow rates
	  • subsurface component capacity
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD532A Prepare detailed design of tunnels

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of tunnels in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of tunnels works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of tunnels within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of tunnels	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***tunnels project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of tunnels	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of tunnels 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the tunnels that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed tunnels 2.5. Participate in the review of the tunnel design with peers and stakeholders 2.6. Complete the documentation of the tunnel design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of tunnels	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the application of the design of tunnels	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous

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	improvements of tunnel detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of tunnels:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret tunnels construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret tunnels option selection data
- determine tunnels loadings and capacity requirements
- select tunnels options
- size tunnels components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate areas, volumes, densities, mass, percentages and grades
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of tunnels:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- tunnels options
- tunnels geometric requirements
- potential hazards, constraints and conditions that may affect tunnels design and construction
- trench and pit shoring requirements
- current industry best practice in tunnels design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of tunnels construction tasks
- tunnels construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of tunnels • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of tunnels • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of tunnels that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of tunnels • consistent successful completion of the detailed design and documentation of tunnels
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of tunnels
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of tunnels that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the detailed design and documentation of tunnels • provision of clear and timely required support and advice on the completion of the detailed design and documentation of tunnels
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Tunnel design
may include its application for:
	• the layout of:
	  • road tunnels
	  • rail tunnels
	  • pedestrian tunnels
	  • underground services tunnels
	• but it does not include detailed design of the following:
	  • pavement
	  • pavement surface treatment
	  • sub-surface drainage

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	• traffic management systems • underground services • civil structures • lighting • environmental controls • landscaping
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements

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	• contribution to ancillary documentation, which may include: • design notes • construction notes • supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD533A Prepare detailed design of civil concrete structures

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of civil concrete structures in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of civil concrete structures works, it does not include the certification of the design.
This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of civil concrete structures within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of civil concrete structures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***civil concrete structures project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of civil concrete structures	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of civil concrete structures 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the civil concrete structures that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed civil concrete structures 2.5. Participate in the review of the civil concrete structures design with peers and stakeholders 2.6. Complete the documentation of the civil concrete structures design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of civil concrete structures	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the	4.1. Provide clarification and advice to those

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application of the design of civil concrete structures	applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of civil concrete structures detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of civil concrete structures:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret civil concrete structures components selection data
- select civil concrete structures component options
- calculate of loads, sheer forces, bending moments, stresses, areas, volumes and mass
- size civil concrete structures components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of civil concrete structures:

- risk assessment and management requirement and procedures

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- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- civil concrete structures design principles
- civil concrete structures options
- civil concrete structures geometric requirements
- potential hazards, constraints and conditions that may affect civil concrete structures design and construction
- current industry best practice in civil concrete structures design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of civil concrete structures construction tasks
- civil concrete structures materials characteristics
- civil concrete structures construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of civil concrete structures • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of civil concrete structures • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of civil concrete structures that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of civil concrete structures • consistent successful completion of the detailed design and documentation of civil concrete structures
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of civil concrete structures
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of civil concrete structures that best meet the required outcomes
	  • consistently achieving the required

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	outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the detailed design and documentation of civil concrete structures
	  • provision of clear and timely required support and advice on the completion of the detailed design and documentation of civil concrete structures

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Civil concrete structures
may include:
	• bridges, including their:
	  • foundations
	  • abutments
	  • piers
	  • beams
	  • decks
	  • pre-cast and in-situ elements
	  • normally reinforced and pre-stressed elements
	• retaining walls

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	• water storage tanks and small dams • noise barriers • culverts • safety barriers
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes

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	• construction notes • supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD534A Prepare detailed design of civil steel structures

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of civil steel structures in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of civil steel structures works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of civil steel structures within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of civil steel structures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***civil steel structures project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of civil steel structures	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of civil steel structures 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the civil steel structures that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed civil steel structures 2.5. Participate in the review of the civil steel structures design with peers and stakeholders 2.6. Complete the documentation of the civil steel structures design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of civil steel structures	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the	4.1. Provide clarification and advice to those

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application of the design of civil steel structures	applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of civil steel structures detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of civil steel structures:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret civil steel structures component selection data
- select civil steel structures component options
- calculate of loads, sheer forces, bending moments, stresses, areas, volumes and mass
- size civil steel structures components
- select civil steel structure joint and fastening options
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of civil steel structures:

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- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- civil steel structures design principles
- civil steel structures options
- civil steel structures geometric requirements
- civil steel structures surface treatment requirements
- potential hazards, constraints and conditions that may affect civil steel structures design and construction
- current industry best practice in civil steel structures design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of civil steel structures construction tasks
- civil steel structures construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of civil steel structures • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of civil steel structures • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of civil steel structures that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of civil steel structures • consistent successful completion of the detailed design and documentation of civil steel structures
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of civil steel structures
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of civil steel structures that best meet the required outcomes
	  • consistently achieving the required outcomes

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	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the detailed design and documentation of civil steel structures
	  • provision of clear and timely required support and advice on the completion of the detailed design and documentation of civil steel structures

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Civil steel structures may include:	• bridges • sign gantries • vertical sign supports • noise barrier supports • guardrails
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data

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	• project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • loads
	  • sheer forces
	  • bending moments
	  • stresses
	  • construction materials and services quantities
	  • construction cost estimates
	• recommended sizing of components
	• recommended concrete strength
	• recommended reinforcement sizing and location
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings

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	• input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD535A Prepare detailed design of civil timber structures

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of civil timber structures in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of civil timber structures works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of civil timber structures within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of civil timber structures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***civil timber structures project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of civil timber structures	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of civil timber structures 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the civil timber structures that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed civil timber structures 2.5. Participate in the review of the civil timber structures design with peers and stakeholders 2.6. Complete the documentation of the civil timber structures design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of civil timber structures	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the	4.1. Provide clarification and advice to those

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application of the design of civil timber structures	applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of civil timber structures detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of civil timber structures:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret meteorological data
- interpret civil timber structures construction materials test results
- interpret cultural and heritage data
- carry out risk assessments
- interpret civil timber structures components selection data
- select civil timber structures options
- calculate of loads, sheer forces, bending moments, stresses, areas, volumes and mass
- size civil timber structures components
- select civil timber structure joint and fastening options
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design

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and documentation of civil timber structures:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- civil timber structures options
- civil timber structures geometric requirements
- civil timber structures surface treatment requirements
- potential hazards, constraints and conditions that may affect civil timber structures design and construction
- current industry best practice in civil timber structures design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of civil timber structures construction tasks
- civil timber structures construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of civil timber structures • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of civil timber structures • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of civil timber structures that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of civil timber structures • consistent successful completion of the detailed design and documentation of civil timber structures
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of civil timber structures
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of civil timber structures that best meet the required outcomes
	  • consistently achieving the required

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	outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the detailed design and documentation of civil timber structures
	  • provision of clear and timely required support and advice on the completion of the detailed design and documentation of civil timber structures

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • metrological data

Civil timber structures may include:	• bridges, jetties and wharves • retaining walls • noise barriers
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints

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	• existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • loads
	  • sheer forces
	  • bending moments
	  • stresses
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• recommended sizing of components
	• recommended timber grade
	• recommended joints and fastening
	• recommended surface treatment
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD536A Prepare detailed design of civil masonry, crib and gabion structures

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of civil masonry, crib and gabion structures in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of civil masonry, crib and gabion structures works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of civil masonry, crib and gabion structures within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of civil masonry, crib and gabion structures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***civil masonry***, ***crib and gabion structures project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of civil masonry, crib and gabion structures	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of civil masonry, crib and gabion structures 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the civil masonry, crib and gabion structures 2.4. Prepare a cost estimate of the execution of the designed civil masonry, crib and gabion structures 2.5. Participate in the review of the civil masonry, crib and gabion structures design with peers and stakeholders 2.6. Complete the documentation of the civil masonry, crib and gabion structures design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of civil masonry, crib and gabion structures	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems
4. Support and review the	4.1. Provide clarification and advice to those

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application of the design of civil masonry, crib and gabion structures	applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of civil masonry, crib and gabion structures detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of civil masonry, crib and gabion structures:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret masonry, crib and gabion structures construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret civil masonry, crib and gabion structures options selection data
- select civil masonry, crib and gabion structures options
- calculate areas, volumes, loads, pressures, mass and grades
- size civil masonry, crib and gabion structures components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of civil masonry, crib and gabion structures:

- risk assessment and management requirement and procedures

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- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- civil masonry, crib and gabion structures options
- civil masonry, crib and gabion structures geometric requirements
- civil masonry, crib and gabion structures surfacing requirements
- potential hazards, constraints and conditions that may affect civil masonry, crib and gabion structures design and construction
- current industry best practice in civil masonry, crib and gabion structures design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of civil masonry, crib and gabion structures construction tasks
- civil masonry, crib and gabion structures construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of civil masonry, crib and gabion structures • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of civil masonry, crib and gabion structures • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of civil masonry, crib and gabion structures that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of civil masonry, crib and gabion structures • consistent successful completion of the detailed design and documentation of civil masonry, crib and gabion structures
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of civil masonry, crib and gabion structures
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of civil masonry, crib and gabion structures that best meet the

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	required outcomes • consistently achieving the required outcomes • first hand testimonial and documentary evidence of the candidate's: • working with others to undertake and complete the detailed design and documentation of civil masonry, crib and gabion structures • provision of clear and timely required support and advice on the completion of the detailed design and documentation of civil masonry, crib and gabion structures
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Civil masonry, **crib and gabion structures** may include:	• masonry walls • crib walls • gabion walls • foundations for these walls
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data

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	• project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • loads
	  • pressures
	  • earthworks volumes
	  • construction materials and services quantities
	  • construction cost estimates
	• drawings
	• recommended sizing of wall and footings components
	• recommended footings concrete strength
	• recommended footings reinforcement sizing and location
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD537A Prepare detailed design of marine structures civil works

Modification History

Not applicable.

Unit Descriptor

This unit covers the completion of the detailed design and documentation of marine structures civil works in Civil Construction. It includes the preparation and planning for the detailed design, undertaking of the detailed design, finalisation of the detailed design processes and supporting the application of the detailed design.

Application of the Unit

This unit requires the identification of design inputs, production of calculations, drawings, design options and solutions and specifications required for the completion of marine structures civil works, it does not include the certification of the design. This unit is appropriate for those working in a management role or as a technical specialist, for the completion of the detailed design and documentation of marine structures civil works within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the detailed design of marine structures civil works	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***marine structures civil works project requirements and information*** for the completion of the detailed design 1.3. Prepare a ***design plan*** which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of marine structures civil works	2.1. Interpret and analyse the relevant data and identify the available viable options for the detailed design of marine structures civil works 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed design*** of the marine structures civil works that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the designed marine structures civil works 2.5. Participate in the review of the marine structures civil works design with peers and stakeholders 2.6. Complete the documentation of the marine structures civil works design 2.7. Monitor and coordinate the progress of other team members involved in the design process 2.8. Gain design approval
3. Finalise design processes of marine structures civil works	3.1. Ensure filing of design records is completed 3.2. Complete and submit design cost and other reporting 3.3. Participate in performance review of the design process 3.4. Seek client feedback and contribute to the verification of the design 3.5. Close out all systems

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4. Support and review the application of the design of marine structures civil works	4.1. Provide clarification and advice to those applying the design 4.2. Review the application of the design and recommend changes for the continuous improvements of marine structures civil works detailed designs 4.3. Contribute to the validation of the design

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to complete the detailed design and documentation of marine structures civil works:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret design briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret marine structures civil works component selection data
- select marine structures civil works component options
- calculate of loads, sheer forces, bending moments, stresses, areas, volumes and mass
- size marine structures civil works components
- provide leadership and coordination
- choose appropriate construction techniques
- develop and apply design plans
- apply computer aided drafting design (CADD) and drafting technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to complete the detailed design and documentation of marine structures civil works:

- risk assessment and management requirement and procedures

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- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- marine structures civil works design principles
- marine structures civil works options
- marine structures civil works geometric requirements
- potential hazards, constraints and conditions that may affect marine structures civil works design and construction
- current industry best practice in marine structures civil works design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of marine structures civil works construction tasks
- marine structures civil works materials characteristics
- marine structures civil works construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the completion of the detailed design and documentation of marine structures civil works • implementation of procedures and techniques for the safe, effective and efficient completion of the detailed design and documentation of marine structures civil works • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the detailed design and documentation of marine structures civil works that best meet the required outcomes • working with others to undertake and complete the detailed design and documentation of marine structures civil works • consistent successful completion of the detailed design and documentation of marine structures civil works
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the completion of the detailed design and documentation of marine structures civil works
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of the detailed design and documentation of marine structures civil works that best meet the required outcomes
	  • consistently achieving the required

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	outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the detailed design and documentation of marine structures civil works
	  • provision of clear and timely required support and advice on the completion of the detailed design and documentation of marine structures civil works

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Marine structures civil works
may include:
	• jetties, wharves and mariners, including:
	  • substructure
	  • superstructure
	• concrete, steel and timber components

Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data

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	• project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Design plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • design process communication and reporting requirements

Preferred option factors
may include:
	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works

Detailed design
may include:
	• calculations, including:
	  • loads
	  • sheer forces
	  • bending moments
	  • stresses
	  • construction materials and services quantities
	  • construction cost estimates
	• recommended sizing of components
	• recommended materials
	• recommended joints and fastening
	• recommended surface treatment
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the completed works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD601A Manage the civil works design process

Modification History

Not applicable.

Unit Descriptor

This unit covers the management of the civil works design process in Civil Construction. It includes the requirements to interpret and scope design requirements; identify project design options and determine the preferred design option; initiate, monitor and support, the design process; prepare and maintain documentation during the design process; review design to achieve acceptance; and support the application of designs.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, for the management of the civil works design process within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Interpret and scope civil works design requirements	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the client's requirements for the ***design*** of ***civil works*** 1.3. Advise the client on the implications for sustainability and options for an improved environmental outcome in the project 1.4. Analyse the client requirements for the design criteria to ensure all appropriate specifications are included in the design requirements 1.5. ***Confirm*** that all ***development and implementation factors*** are accounted for in the design requirements 1.6. Prepare functional specifications applying engineering standards and the design specifications 1.7. Document and obtain the client's agreement on the criteria for the design
2. Identify civil works project design options and determine the preferred design option	2.1. Identify innovative approaches to the development of the possible design concept 2.2. Investigate and analyse the possible design concepts capable of achieving the design requirements 2.3. Seek advice from appropriate personnel and sources where the concept proposal has non standard engineering requirements or where new technology may apply 2.4. Collaborate with the client to adapt the design concept to improve the outcomes and overcome problems 2.5. Advise the client of the likely impacts on the community
3. Initiate, monitor and support the design of civil works	3.1. Analyse and select resources, processes and systems to develop the design 3.2. ***Arrange design tasks*** to meet the agreed outcomes and cost structure 3.3. Develop and check the design solution using the engineering specification 3.4. Create (when appropriate) a demonstration

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	model of the design
4. Prepare and maintain documentation during the civil works design process	4.1. Establish the documentation management process 4.2. Ensure that the supporting documentation required to implement the design is accurate, concise, complete and clear 4.3. Ensure that the designed item is identified by agreed design documentation and records 4.4. Apply the agreed documentation control process when making changes to design 4.5. Ensure that the documentation for the design remains accurate and current during the design development
5. Review civil works design to achieve acceptance	5.1. Review the design to ensure that the client's requirements are met 5.2. Inform the user of the likely impact on the user's lifestyle 5.3. Incorporate corrections and make improvements to the design ensuring social responsibilities, such as sustainability are met 5.4. Review the design with the client to gain documented acceptance
6. Support the application of civil works designs	6.1. Prepare and implement plans to verify that completed physical work meets client's requirements 6.2. Develop periodic test schedules to monitor performance and enable others to take any corrective action necessary 6.3. Seek feedback from the commissioning process to facilitate corrective actions or improvements 6.4. Evaluate the performance of the design outcomes in the user's environment using appropriate tools 6.5. Evaluate community reaction to the design outcome

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to manage the civil works design process:

- apply legislative, organisation and site requirements and procedures
- interpret project plans and drawings
- interpret project specifications
- interpret project design briefs
- interpret Australian and other appropriate standards
- interpret project engineering survey information
- interpret project hydrological data
- interpret meteorological data
- interpret project geotechnical data
- interpret cultural and heritage data
- carry out risk assessments
- provide team leadership and coordination
- apply innovative solutions and new technology
- apply consultative processes
- choose appropriate operational techniques
- develop and apply design plans
- prepare civil works functional specifications
- apply computer aided design (CADD) technology
- apply engineering graphical presentation techniques
- calculate of design costs
- maintain design cost records
- provide clarification and advice
- apply negotiation techniques
- apply client feedback techniques
- apply principles of road user behaviour

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to manage the civil works design process:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures

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- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- current industry best practice
- civil works options
- civil works geometric requirements
- civil works surfacing requirements
- potential hazards, constraints and conditions that may affect civil works design and construction
- current industry best practice in civil works design and construction
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of civil works construction tasks
- civil works construction plant and equipment capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the management of the civil works design process • implementation of procedures and techniques for the safe, effective and efficient completion of the civil works design process • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to undertake and complete the management of the civil works design process • consistent and timely completion of the civil works design process
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of the civil works design process that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the civil works design process
	  • consistent and timely gaining of approval of civil works designs
	  • provision of clear, timely required support

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	and advice on the implementation of the civil works design process
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Design
may include:
	• calculations, which may include:
	  • loads
	  • sheer forces
	  • bending moments
	  • stresses
	  • construction materials and services quantities
	  • construction cost estimates
	• recommended sizing of components
	• recommended materials
	• recommended reinforcement sizing and location
	• drawings
	• risk assessment of:
	  • the existing conditions
	  • the application of the design
	  • maintainability of the works
	• health, safety and environmental requirements
	• contribution to ancillary documentation, which may include:
	  • design notes
	  • construction notes
	  • supplementary drawings
	  • input to the specifications

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Civil Works
may include:
	• land clearing
	• bulk earthworks
	• surface drainage works
	• water storage dams construction
	• tailings dams construction
	• topsoil management
	• rehabilitation works
	• road works preparation (including the sub grade)
	• pavement construction, including:
	  • flexible pavements, including:
	• natural pavement materials
	• manufactured pavement materials
	• asphalt placement
	• spray seal application
	• stabilisation
	  • rigid pavement construction
	• underground services construction
	• construction of civil structures
	• tunnelling
	• dredging

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• obtaining further site data, including:
	  • geological data
	  • survey data
	  • hydrological data

Development and implementation factors may include:	• project specifications • project site geological data • project site hydrological data • project site engineering survey data • existing project drawings • relevant Australian or other standards
Arranging the design tasks may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • communication and reporting requirements

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Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWM401B Supervise civil works

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of civil works tasks in Civil Construction. It includes the requirements for planning, preparing, initiating, monitoring, adjusting and reporting of civil works tasks.

Application of the Unit

This is a general civil works supervision unit and specialist units will be required to cover the skills and knowledge in specific areas of civil works.
This unit is appropriate for those working in a supervisory role or as a technical specialist, supervising of civil works tasks within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for civil works tasks	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access and share with team members the ***specific task information and requirements*** relevant to civil works tasks 1.3. Prepare a ***job plan***, in conjunction with ***relevant team members***, which makes best use of the available resources and meets the task requirements
2. Initiate civil works tasks	2.1. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of the tasks 2.2. Issue clear and timely ***instructions*** to team members and others involved, for the safe, effective and efficient conduct of the tasks 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** the civil works task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to civil works practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of civil works tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervising civil works tasks:

- apply legislative, organisation and site requirements and procedures
- interpret client requirements and procedures
- interpret project contract requirements and procedures
- interpret manufacturer's requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- interpret material properties and test results
- drainage issues
- choose appropriate operational techniques for the execution of civil works tasks
- choose and assign appropriate plant and equipment for the execution civil works tasks
- calculate quantities for the execution of civil works tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures
- determine task resource requirements
- schedule activities and materials delivery
- draft and administer job plans
- implement work zone traffic management plans
- prepare for and conducting of briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide team leadership
- assess individuals' performances

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- apply task performance monitoring skills
- interpret civil works test results materials properties and test results
- provide recommendations for the improvement of the safe, effective and efficient execution of civil works task
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - tonnage required
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervising civil works tasks:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- procurement requirements and procedures
- plant, equipment and tools maintenance requirements and procedures
- reporting requirements and procedures
- employment requirements and procedures
- workplace relationship requirements and procedures
- organisational and site operational requirements
- relationship between various areas of civil works
- operational techniques required for the execution of civil works construction tasks
- civil works plant and equipment capabilities

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- team leadership techniques
- works planning techniques
- civil works monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- set out requirements and procedures
- road geometry
- drainage requirements
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of civil works tasks • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of civil works tasks • working with others to plan, prepare and conduct civil works tasks • provision of clear and timely instruction and supervision by the individual of those involved in civil works tasks • evidence of the consistent successful supervision of civil works tasks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct of civil works tasks
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of civil works tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Specific task information and requirements may include:	• site geological and geotechnical data, including: • rock types and characteristics • soil types and characteristics • site hydrological data, including: • surface water • ground water • site meteorological data, including: • rainfall • humidity • temperature • wind • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • types of asphalt • other organisations and contractors involved in the task or related tasks • coordination, timing and budgeting requirements
Civil works may include:	• road and pavement construction and maintenance, including: • flexible pavement construction • rigid pavement construction • stabilisation of materials • pavement maintenance • bituminous surfacing, including: • asphalt paving and compaction • application of bituminous spray treatment • application of polymer modified binders • selection and use of bituminous emulsions

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	• application of slurry surfacing • pavement profiling, using a profiler • manufacture and delivery of hot mix asphalt • manufacture of cold mix • manufacture of polymer modified binders • manufacture of bituminous emulsion • manufacture of slurry surfacing • civil structures, including: • civil concrete structure construction • civil steel structure construction • civil timber structure construction • civil masonry, crib and gabion construction • inspection of civil structures • maintenance of civil structures • tunnel construction • demolitions
Civil works tasks may include:	• site preparation methods • extraction methods • load and haulage methods • placement methods • distribution methods • surface finishing methods • line, grade and level control methods • compaction methods • water application methods • sediment control methods • installation of underground services
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements

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	• task performance monitoring requirements • communication requirements • reporting requirements
Relevant team members may include:	• other members of the organisation's management team • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks • experienced members of the team directly involved in the task
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • recording and observation of construction practice • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

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Unit Sector(s)

Civil Works (Management and Supervision)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWM402A Supervise civil works contractors

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of civil works contractors in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of civil works tasks are carried out by the contractor in accordance with the contract requirements.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, supervising of civil works contractors within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***task information and requirements*** relevant to undertaking ***specific civil works tasks*** 1.3. Ensure the contractor has a ***job plan*** available which makes best use of the available resources and meets the task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the contractor has the necessary ***resources*** available for the safe, effective and efficient conduct of the tasks 2.2. Ensure the contractor has communicated clear and timely ***instructions*** to ***team members*** and others involved, for the safe, effective and efficient conduct of the tasks 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** civil works contractors' performance to ensure they achieve the ***required outcomes*** 3.2. ***Initiate*** adjustments to ***civil works practice*** or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise civil works contractors:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - tonnage required
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret civil works test results materials properties and test results

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Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise civil works contractors:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- civil works plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of civil works tasks
- civil works task resource requirements and procedures
- activities scheduling requirements and procedures
- materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- civil works monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- set out requirements and procedures
- pavement drainage requirements
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of civil works contractors • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of civil works contractors • working with others to plan, prepare and carry out civil works contracts • provision of clear and timely instruction and supervision by the individual of those involved in the supervision of civil works contractors • evidence of the consistent successful supervision of civil works contractors
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and carry out civil works contracts
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the supervision of civil works contractors

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Civil works may include:	• land clearing
	• bulk earthworks
	• surface drainage construction and maintenance
	• subsurface drainage construction and maintenance
	• water storage dams construction and maintenance
	• tailings dams construction and maintenance
	• topsoil management
	• rehabilitation works
	• road works preparation (including the sub grade)
	• pavement construction and maintenance, including:
	  • flexible pavements, including:
	• natural pavement materials
	• manufactured pavement materials
	• asphalt placement
	• spray seal application
	• stabilisation
	  • rigid pavement
	• underground services construction and maintenance
	• applying trenchless technology
	• construction and maintenance of civil structures
	• tunnelling

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	• dredging
Civil works tasks may include:	• site preparation methods • extraction methods • load and haulage methods • placement methods • distribution methods • surface finishing methods • line, grade and level control methods • compaction methods • water application methods • sediment control methods

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling

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	• risk assessment and management requirements • occupational Health And Safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • recording and observation of construction practice • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

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Unit Sector(s)

Civil Works (Management and Supervision)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWM501A Implement civil construction plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of civil construction plans in Civil Construction. It includes the requirements to prepare for planning, as well as preparing detailed implementation plans and initiating the implementation; monitoring, adjusting, reporting and supporting the implementation of civil construction plans.

Application of the Unit

The civil construction implementation plan could cover the execution of a specific part of an overall civil works construction plan. It could cover a specific geographic section or a specific class of work (e.g. land clearing) that forms part of a larger project.
This unit is appropriate for those working in a management role or as a technical specialist, to implement civil construction plans within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for the planning of the implementing of civil construction plans	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the civil construction plan requirements for the ***implementation of civil construction plan*** 1.3. ***Confirm*** the availability and accuracy of the ***project information*** 1.4. Prepare the scope of work required for the safe effective and efficient implementation
2. Prepare the detailed plan for the implementation of civil construction	2.1. Identify the viable available options for the implementation of the specific civil construction 2.2. Select the preferred option and draft the implementation program in consultation with relevant team members, which makes best use of the available resources and meets the specific civil construction requirements 2.3. Identify contingency requirements to be allowed for in the execution of the plan 2.4. ***Monitor*** and coordinate the progress of other team members involved in the planning process 2.5. Identify and schedule the resources required for the execution of the implementation plan 2.6. Identify the key performance indicators to be used in the monitoring and assessment of the project performance 2.7. Identify and clarify the construction milestones required in the construction plan 2.8. Prepare an accurate estimate of the cost of execution of the implementation plan in consultation with relevant team members 2.9. Gain approval of the implementation plan 2.10. Document the implementation plan
3. Initiate civil construction implementation plans	3.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the plan 3.2. Issue clear and timely ***instructions*** to team members and others involved, for the safe,

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	effective and efficient conduct of the plan
4. Monitor, adjust and report on the execution of civil construction plans	4.1. Monitor the civil construction implementation plan performance to ensure it achieves the required outcomes 4.2. Initiate adjustments to civil construction implementation plan to ensure achievement of required outcomes 4.3. Provide ongoing clarification and advice to those applying the plan to ensure the successful completion of the project 4.4. Ensure reports are complete and submit as required 4.5. Participate in performance review the implementation plan 4.6. Recommend changes to improve the safety, efficiency and effectiveness of the civil construction implementation plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement civil construction plans:

- apply legislative, organisation and site requirements and procedures
- interpret project plans and drawings
- interpret project specifications
- interpret project construction briefs
- interpret project engineering survey information
- interpret project hydrological data
- interpret meteorological data
- interpret project geotechnical data
- provide team leadership and coordination
- apply innovative solutions and new technology
- apply consultative processes
- choose appropriate operational techniques
- develop and apply construction plans
- apply project scheduling and resource management technology
- calculate of construction resource quantities and project costs
- maintain construction cost records
- provide clarification and advice
- apply negotiation techniques
- apply feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement civil construction plans:

- risk management requirement and procedures
- statutory compliance requirements and procedures
- construction implementation plan development and implementation requirements and procedures
- occupational health and safety requirements and procedures
- environmental requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures

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- Australian and other relevant standards
- industry and organisational construction procedures and practice
- civil construction works options
- sources of information on innovation and new technology
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of civil construction projects
- civil construction plant and equipment capabilities
- cost estimation techniques
- construction plan review principles and procedures
- construction plan documentation requirements
- construction plan reporting requirements and procedures
- construction plan approval requirements and procedures
- construction plan records filing requirements and procedures
- performance review requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation of civil construction plans • implementation of procedures and techniques for the safe, effective and efficient implementation of civil construction plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of civil construction plans that best meet the required outcomes • working with others to undertake and complete the implementation of civil construction plans • consistent successful implementation of civil construction plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of civil construction plans
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of civil construction plans that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the implementation of civil construction plans • provision of clear and timely required support and advice on the implementation of civil construction plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Civil construction
may include:
	• land clearing
	• bulk earthworks
	• surface drainage works
	• water storage dams construction
	• tailings dams construction
	• topsoil management
	• rehabilitation works
	• road works preparation (including the sub grade)
	• pavement construction, including:
	  • flexible pavements, including:
	• natural pavement materials
	• manufactured pavement materials
	• asphalt placement
	• spray seal application
	• stabilisation
	  • rigid pavement construction
	• underground services construction
	• construction of civil structures
	• tunnelling
	• dredging

Implementation of civil construction plan may include:	• risk management requirements and procedures • statutory compliance requirements and procedures • occupational health and safety requirements

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	and procedures
	• environmental management requirements and procedures
	• quality requirements and procedures
	• inspection and testing requirements and procedures
	• communication and consultation requirements and procedures
	• community relations requirements and procedures
	• traffic management requirements and procedures
	• training requirements and procedures
	• allocation of responsibilities
	• position descriptions
	• administration requirements and procedures, including records and reporting
	• operational techniques required for the execution of civil construction projects
	• cost management requirements and procedures
	• client liaison requirements and procedures
	• construction plan review requirements and procedures
	• construction plan documentation requirements and procedures
	• construction plan reporting requirements and procedures
	• implementation plan approval requirements and procedures
	• construction plan records filing requirements and procedures
	• performance review requirements and procedures
	• scheduling requirements and procedures
	• resource requirements and procedures
	• production rates requirements and procedures
	• coordination requirements and procedures
	• review requirements
	• communication and reporting requirements
	• drawings
	• ancillary documentation, which may include:
	  • construction notes
	  • construction notes

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	• supplementary drawings • specifications

Confirm
may include:
	• consultation with the client
	• consultation with others within the organisation
	• obtaining further site data, including:
	  • geological data
	  • survey data
	  • hydrological data
	  • meteorological data

Project information may include:	• project designs • project specifications • project site geological data • project site hydrological data • project site engineering survey data • project site meteorological data • project site environmental requirements • community considerations • heritage issues • impact assessment information • available resources • existing project drawings • relevant Australian or other standards

Unit Sector(s)

Civil Works (Management and Supervision)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWM502A Implement civil works maintenance program

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of civil works maintenance programs in Civil Construction. It includes the requirements to prepare for planning, as well as preparing detailed implementation plans and initiating the implementation, monitoring, adjusting, reporting and supporting the implementation of civil works maintenance programs.

Application of the Unit

The civil works maintenance and implementation plan may cover the execution of a specific part of an overall civil works maintenance program. It may cover a specific geographic section or a specific class of work (e.g. bridge maintenance) that forms part of a larger program. This unit is appropriate for those working in a management role or as a technical specialist, to implement of civil works maintenance programs within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for the planning of the implementing of civil works maintenance programs	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the civil works maintenance program requirements for the ***implementation of civil works maintenance*** 1.3. Confirm the current condition of the assets scheduled for maintenance and if appropriate recommend reclassification of serviceability
2. Prepare the detailed plan for the implementation of civil works maintenance	2.1. Identify the viable available options for the implementation of the specific civil works maintenance tasks 2.2. Select the preferred option and draft the implementation program in consultation with relevant team members, which makes best use of the available resources and meets the specific civil works maintenance requirements 2.3. Identify contingency requirements to be allowed for in the implementation of the plan 2.4. ***Monitor*** and coordinate the progress of other team members involved in the planning process to ensure the effective and efficient completion of the plan 2.5. Identify and schedule the resources required for the execution of the implementation plan 2.6. Identify the key performance indicators to be used in the monitoring and assessment of the project performance 2.7. Identify and clarify the maintenance works milestones required in the works maintenance program 2.8. Prepare an accurate estimate of the cost of execution of the implementation plan in consultation with relevant team members 2.9. Gain approval of the implementation plan 2.10. Document the implementation plan in accordance with the works maintenance

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	program requirements
3. Initiate civil works maintenance implementation plans	3.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the plan 3.2. Issue clear and timely ***instructions*** to team members and others involved, for the safe, effective and efficient conduct of the plan
4. Monitor, adjust and report on the implementation of civil works maintenance programs	4.1. Monitor the civil works maintenance implementation plan performance to ensure it achieves the required outcomes 4.2. Provide ongoing clarification and advice to those applying the plan to ensure the successful completion of the project 4.3. Ensure reports are complete and submit as required by the works maintenance program 4.4. Participate in performance review the implementation plan 4.5. Recommend changes to improve the safety, efficiency and effectiveness of civil works maintenance implementation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement civil works maintenance programs:

- apply legislative, organisation and site requirements and procedures
- interpret project plans and drawings
- interpret project specifications
- interpret project maintenance works briefs
- interpret project engineering survey information
- interpret project hydrological data
- interpret meteorological data
- interpret project geotechnical data
- schedule of inspection programs
- interpret of inspection data
- classify the levels of the serviceability of assets
- prioritise maintenance works
- provide team leadership and coordination
- apply innovative solutions and new technology
- apply consultative processes
- choose appropriate maintenance operational techniques
- develop and apply works maintenance programs
- apply project scheduling and resource management technology
- calculate of maintenance works resource quantities and project costs
- maintain maintenance works cost records
- provide clarification and advice
- apply negotiation techniques
- apply feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement civil works maintenance programs:

- risk management requirement and procedures
- statutory compliance requirements and procedures
- maintenance works implementation plan development and implementation requirements and procedures

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- occupational health and safety requirements and procedures
- environmental requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards
- inspection program scheduling requirements and procedures
- inspection data interpreting requirements and procedures
- asset condition classification requirements and procedures
- maintenance works prioritisation requirements and procedures
- industry and organisational maintenance works procedures and practice
- civil works maintenance options
- sources of information on innovation and new technology
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of civil works maintenance projects
- civil works maintenance plant and equipment capabilities
- cost estimation techniques
- maintenance program review principles and procedures
- maintenance program documentation requirements
- maintenance program reporting requirements and procedures
- maintenance program approval requirements and procedures
- maintenance program records filing requirements and procedures
- performance review requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation of civil works maintenance programs • implementation of procedures and techniques for the safe, effective and efficient the implementation of civil works maintenance programs • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of civil works maintenance programs that best meet the required outcomes • working with others to undertake and complete the implementation of civil works maintenance programs • consistent successful implementation of civil works maintenance programs
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of civil works maintenance programs
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of civil works maintenance programs that best meet the required outcomes
	  • consistently achieving the required

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	outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the implementation of civil works maintenance programs
	  • provision of clear and timely required support and advice on the implementation of civil works maintenance programs

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliancedocumentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Civil works maintenance
may include:
	• surface drainage works
	• water storage dams
	• tailings dams
	• rehabilitation works
	• pavements, including:
	  • flexible pavements, including:
	• natural pavement materials
	• manufactured pavement materials
	• asphalt placement
	• spray seal application
	• stabilisation
	  • rigid pavement
	• underground services
	• civil structures
	• tunnels
	• canals

Implementation of civil works maintenance may include:	• risk management requirements and procedures • statutory compliance requirements and procedures • occupational health and safety requirements and procedures • environmental management requirements and procedures • quality requirements and procedures • inspection and testing requirements and

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	procedures
	• communication and consultation requirements and procedures
	• community relations requirements and procedures
	• traffic management requirements and procedures
	• training requirements and procedures
	• allocation of responsibilities
	• position descriptions
	• administration requirements and procedures, including records and reporting
	• operational techniques required for the execution of civil works maintenance projects
	• cost management requirements and procedures
	• client liaison requirements and procedures
	• maintenance program review requirements and procedures
	• maintenance program documentation requirements and procedures
	• maintenance program reporting requirements and procedures
	• implementation plan approval requirements and procedures
	• works maintenance program records filing requirements and procedures
	• performance review requirements and procedures
	• scheduling requirements and procedures
	• resource requirements and procedures
	• production rates requirements and procedures
	• coordination requirements and procedures
	• review requirements
	• communication and reporting requirements
	• drawings
	• ancillary documentation, which may include:
	  • maintenance works notes
	  • construction notes
	  • supplementary drawings
	  • specifications

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Monitor may include:	• engineering survey • sampling and testing • recording and observation of construction practice, • general supervision
Instructions may include:	• project plans • briefings • handovers • work orders • toolbox meetings • site meetings

Unit Sector(s)

Civil Works (Management and Supervision)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWM503A Prepare civil works cost estimate

Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation of civil works cost estimates in Civil Construction. It includes planning for the civil works cost estimates process, confirming the bills of quantities and the schedules of rates, developing and gaining agreement on the estimated cost of the civil works project, and supporting and reviewing the application of the cost estimate.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, for the preparation of civil works cost estimates within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the civil works bills of quantities	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the civil works ***project requirements and information*** required for the preparation of the cost estimate 1.3. Review and confirm the draft works program that details the various tasks or activities to be undertaken to complete the required ***civil works*** 1.4. Confirm agreement on the draft works program
2. Confirm bills of quantities	2.1. Review and confirm the on-site labour bill of quantities for the civil works project 2.2. Review and confirm the materials bill of quantities for the civil works project 2.3. Review and confirm the sub-contractor services bill of quantities for the civil works project
3. Confirm the schedule of rates	3.1. Review and confirm the on-site labour bill of quantities for the civil works project 3.2. Review and confirm the materials bill of quantities 3.3. Review and confirm the sub-contractor services bill of quantities
4. Develop and gain agreement on the estimated cost of the civil works project	4.1. Apply the appropriate confirmed schedule of rates to the confirmed bill of quantities and estimate the civil works project cost 4.2. Gain approval of the civil works cost estimate 4.3. Complete and submit the documentation of the civil works cost estimate
5. Support and review the application of the cost estimate	5.1. Provide clarification and advice to those applying the cost estimate 5.2. Review the application of the cost estimate and recommend changes for the continuous improvements of civil works cost estimate preparation processes

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to prepare civil works cost estimates:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret civil works construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret civil works options selection data
- select civil works options
- size civil works components
- chose appropriate construction techniques
- calculate areas, volumes, labour hours, materials quantities, sub-contractor service capabilities, productivity and required hours
- apply computer based works planning technology
- maintain cost records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to prepare civil works cost estimates:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures

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- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational construction procedures and practice
- current industry best practice
- civil works options
- potential hazards, constraints and conditions that may affect civil works construction
- current industry best practice in civil works construction
- techniques for choosing preferred options
- operational techniques required for the execution of civil works construction tasks
- civil works construction plant and equipment capabilities
- labour, materials and sub-contractor services estimation techniques
- bill of quantities review principles and procedures
- documentation requirements
- reporting requirements and procedures
- cost estimates approval requirements and procedures
- cost estimates records filing requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the preparation of civil works cost estimates • implementation of procedures and techniques for the safe, effective and efficient preparation of civil works cost estimates • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of civil works cost estimates that best meet the required outcomes • working with others to undertake and complete the preparation of civil works cost estimates • consistent successful preparation of civil works cost estimates
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the preparation of civil works cost estimates
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of civil works cost estimates that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the preparation of civil works cost estimates • provision of clear and timely required support and advice on the preparation of civil works cost estimates
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the client(internal and external)
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• review and confirmation of bills of materials data
	• review and confirmation of the schedule of rates data
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • survey data
	  • hydrological data
	  • meteorological data

Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings

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	• Australian or other relevant standards

Civil works
may include:
	• land clearing
	• bulk earthworks
	• surface drainage works
	• water storage dams construction
	• tailings dams construction
	• topsoil management
	• rehabilitation works
	• road works preparation (including the sub grade)
	• pavement construction, including:
	  • flexible pavements, including:
	• natural pavement materials
	• manufactured pavement materials
	• asphalt placement
	• spray seal application
	• stabilisation
	  • rigid pavement construction
	• underground services construction
	• construction of civil structures
	• tunnelling
	• dredging

Unit Sector(s)

Civil Works (Management and Supervision)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWM504A Prepare civil works bill of quantities

Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation of civil works bills of quantities in Civil Construction. It includes planning for the civil works bills of quantities process, identifying and calculating the on-site labour, materials and on-site sub-contractor service requirements, the finalising of the civil works bills of quantities process and supporting and reviewing the application of the bill of quantities.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, for the preparation of a civil works bills of quantities within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the civil works bills of quantities	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the civil works ***project requirements and information*** for the preparation of a ***civil works*** bill of quantities 1.3. Prepare a draft works program that details the various tasks or activities to be undertaken to complete the required civil works 1.4. Gain agreement on the draft works program
2. Identify and calculate on-site labour requirements	2.1. Interpret and analyse the relevant data and identify the types and numbers of on-site labour required to undertake each task 2.2. Analyse and identify the total number of on-site labour required at each stage and overall to safely, effectively and efficiently meets the required project outcomes 2.3. Complete the documentation of the stage by stage and overall labour requirements
3. Identify and calculate materials requirements	3.1. Interpret and analyse the relevant data and identify the types and quantities of materials required to undertake each task in the agreed draft works program 3.2. Analyse and identify the total quantity of materials required to safely, effectively and efficiently meets the required project outcomes 3.3. Complete the documentation of the total materials requirements
4. Identify and calculate the on-site sub-contractor service requirements	4.1. Interpret and analyse the relevant data and identify the types and numbers on-site sub-contractor services required to undertake each task 4.2. Analyse and identify the number of on-site sub-contractor services required to undertake each stage of the works 4.3. Complete the documentation of the stage by stage and overall on-site subcontractor services requirements

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5. Finalise civil works bills of quantities process	5.1. Ensure filing of bill of quantities is completed 5.2. Complete and submit bill of quantities and other reporting 5.3. Gain approval of the bill of quantities
6. Support and review the application of the bill of quantities	6.1. Provide clarification and advice to those applying the bill of quantities 6.2. Review the application of the bill of quantities and recommend changes for the continuous improvements of civil works bill of quantities preparation processes

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to prepare a civil works bills of quantities:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret geotechnical information
- interpret civil works construction materials test results
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret civil works options selection data
- select civil works options
- size civil works components
- choose appropriate construction techniques
- calculate areas, volumes, labour hours, materials quantities, sub-contractor service capabilities, productivity and required hours
- apply computer based works planning technology
- maintain cost records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to prepare a civil works bills of quantities:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational Health and Safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures

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- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational construction procedures and practice
- current industry best practice
- civil works options
- potential hazards, constraints and conditions that may affect civil works construction
- current industry best practice in civil works construction
- techniques for choosing preferred options
- operational techniques required for the execution of civil works construction tasks
- civil works construction plant and equipment capabilities
- labour, materials and sub-contractor services estimation techniques
- bill of quantities review principles and procedures
- documentation requirements
- reporting requirements and procedures
- bills of quantities approval requirements and procedures
- bills of quantities records filing requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the preparation of civil works bills of quantities • implementation of procedures and techniques for the safe, effective and efficient preparation of civil works bills of quantities • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of a civil works bills of quantities that best meet the required outcomes • working with others to undertake and complete the preparation of civil works bills of quantities • consistent successful preparation of civil works bills of quantities
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the preparation of civil works bills of quantities
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of a civil works bills of quantities that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the preparation of civil works bills of quantities • provision of clear and timely required support and advice on the preparation of civil works bills of quantities
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm
may include:
	• consultation with the clients (internal and external)
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • metrological data

Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Civil works	• land clearing

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may include:	• bulk earthworks
	• surface drainage construction and maintenance
	• subsurface drainage construction and maintenance
	• water storage dams construction and maintenance
	• tailings dams construction and maintenance
	• topsoil management
	• rehabilitation works
	• road works preparation (including the sub grade)
	• pavement construction and maintenance, including:
	  • flexible pavements, including:
	• natural pavement materials
	• manufactured pavement materials
	• asphalt placement
	• spray seal application
	• stabilisation
	  • rigid pavement
	• underground services construction and maintenance
	• applying trenchless technology
	• construction and maintenance of civil structures
	• tunnelling
	• dredging

Unit Sector(s)

Civil Works (Management and Supervision)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWM505A Prepare civil works schedule of rates

Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation of civil works schedule of rates in Civil Construction. It includes: planning for the civil works schedule of rates process, preparing and documenting the details of the required materials and sub-contractor services, inviting quotations from materials suppliers and sub-contract service providers, assessing the quotations and prepares schedules of rates for materials and sub-contractor services, preparing the schedule of rates for on-site labour and supporting and reviewing the application of and maintaining civil works schedules of rates.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, for the preparation of civil works schedule of rates within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the civil works schedule of rates	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and list the types of on-site labour that may be employed in the areas of ***civil works*** to be undertaken 1.3. Identify and list the types of materials that may be required 1.4. Identify and list the types of on-site sub-contractor services that may be employed 1.5. Gain agreement on the lists of on-site labour, materials, and on-site sub-contractors services that may be employed or required
2. Prepare and document the details of the materials and sub-contractor services requirements	2.1. Develop and document the details and specifications of the listed materials in consultation with ***relevant team members*** 2.2. Develop and document the details of the listed sub-contractor services in consultation with relevant team members 2.3. Gain agreement on the details and specifications of the materials, and on-site sub-contractors services
3. Invite quotations from materials suppliers and sub-contract service providers	3.1. Prepare invitations to quote on supply of materials and sub-contractor services 3.2. Gain approval of invitations to quote 3.3. Issue the invitation to quote for the supply of materials and sub-contractor services
4. Assess quotations and prepares schedules of rates for materials and sub-contractor services	4.1. Assess submitted materials and sub-contractor services quotation documents against the details and specifications set out in the invitations to quote and determine their validity 4.2. List the selected suppliers and use their quoted prices to calculate the scheduled rates for the listed materials and sub-contractor services 4.3. Gain agreement on the schedules of rates for the listed materials and on-site sub-contractor services

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5. Prepare the schedule of rates for on-site labour	5.1. Develop and document the factors to be applied to hourly labour costs in determining the schedule of rates of on-site labour, in consultation with relevant team members 5.2. Apply these factors to the hourly labour costs of the various types of on-site labour and determine the schedule of rates of on-site labour 5.3. Gain approval of the on-site labour schedule of rates
6. Support and review the application of and maintain the schedule of rates	6.1. Provide clarification and advice to those applying the schedule of rates 6.2. Review the application of the schedule of rates and recommend changes for the continuous improvements of civil works schedule of rates preparation processes 6.3. Monitor costs of relevant labour, materials and sub-contractor services and maintain the currency of the schedules of rate

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to prepare a civil works schedule of rates:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret Australian and other appropriate standards
- identify types of on-site labour employed in civil works
- identify types of materials used in civil works
- Identify types of on-site sub-contractor services employed civil works
- develop and document details and specifications of civil works materials
- develop and document details of civil works sub-contractor services
- prepare invitations to quote on supply of materials and sub-contractor services
- issue invitations to quote for the supply of materials and sub-contractor services
- assess materials and sub-contractor services quotation documents
- develop and document factors to be applied to hourly labour costs in determining the schedule of rates of on-site labour
- calculate unit rates for labour, materials and sub-contractor services
- apply computer based analysis and database technology
- maintain cost records
- provide clarification and advice
- apply client feedback techniques
- monitor costs of labour, materials and sub-contractor services

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to prepare a civil works schedule of rates:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational construction procedures and practice
- current industry best practice in tendering and procurement processes

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- current industry best practice in civil works construction
- operational techniques required for the execution of civil works construction tasks
- labour, materials and sub-contractor services cost analysis techniques
- schedule of rates review principles and procedures
- documentation requirements
- reporting requirements and procedures
- schedule of rates approval requirements and procedures
- schedule of rates records filing requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the preparation of civil works schedule of rates • implementation of procedures and techniques for the safe, effective and efficient preparation of civil works schedule of rates • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of a civil works schedule of rates that best meet the required outcomes • working with others to undertake and complete the preparation of civil works schedule of rates • consistent successful preparation of civil works schedule of rates
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the preparation of civil works schedule of rates
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of a civil works schedule of rates that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the preparation of civil works schedule of rates • provision of clear and timely required support and advice on the preparation of civil works schedule of rates
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Civil works
may include:
	• land clearing
	• bulk earthworks
	• surface drainage works
	• water storage dams construction
	• tailings dams construction
	• topsoil management
	• rehabilitation works
	• road works preparation (including the sub grade)
	• pavement construction, including:
	  • flexible pavements, including:
	• natural pavement materials
	• manufactured pavement materials
	• asphalt placement
	• spray seal application
	• stabilisation
	  • rigid pavement construction
	• underground services construction
	• construction of civil structures
	• tunnelling
	• dredging

Relevant teams members may include:	• other members of the organisation's management team • suppliers representatives • sub-contractors representatives

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	• supervisors or managers of other organisations who are involved in related tasks • experienced members of the team directly involved in the task

Unit Sector(s)

Civil Works (Management and Supervision)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWM601A Establish civil constructions plans

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing of civil construction plans in Civil Construction. It includes the requirements to interpret and scope civil construction plan requirements; identify project construction plan options and determine the preferred construction plan option; initiate, monitor and support, the construction planning process; prepare and maintain documentation during the construction planning process; review construction plan and achieve acceptance; and support the application of construction plans.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, for the establishment of civil construction plans within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for establishing civil construction plans	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the client's requirements for the ***construction of civil works*** 1.3. ***Confirm*** the availability and accuracy of the ***project information*** required for completion of the ***civil construction plan*** 1.4. Prepare the scope of work required for the safe effective and efficient completion of the project
2. Conduct the civil construction planning process	2.1. Identify the viable available options for the construction program 2.2. Select the preferred option and draft the construction program in consultation with relevant team members, which makes best use of the available resources and meets the project requirements 2.3. Identify contingency requirements to be allowed for in the execution of the program 2.4. ***Monitor*** and coordinate the progress of other team members involved in the planning process 2.5. Identify and schedule the resources required for the execution of the construction program 2.6. Identify the key performance indicators to be used in the monitoring and assessment of the project performance 2.7. Gain client agreement on construction milestones 2.8. Prepare an accurate estimate of the cost of execution of the plan in consultation with relevant team members 2.9. Gain approval of the civil construction plan 2.10. Document the civil construction plan
3. Initiate civil construction plans	3.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the plan 3.2. Issue clear and timely ***instructions*** to team

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	members and others involved, for the safe, effective and efficient conduct of the plan, to meet the specific task requirements
4. Monitor, adjust and report on the execution of civil construction plans	4.1. Ensure the safe, effective and efficient execution of the plan 4.2. Monitor the civil construction plan performance to ensure it achieves the required outcomes 4.3. Initiate adjustments to civil construction plan to ensure achievement of required outcomes 4.4. Provide ongoing clarification and advice to those applying the plan 4.5. Ensure reports are complete and submit as required 4.6. Conduct performance review the construction plan 4.7. Recommend changes to improve the safety, efficiency and effectiveness of civil construction planning process

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish civil construction plans:

- apply legislative, organisation and site requirements and procedures
- interpret project plans and drawings
- interpret project specifications
- interpret project construction briefs
- interpret project engineering survey information
- interpret project hydrological data
- interpret meteorological data
- interpret project geotechnical data
- provide team leadership and coordination
- apply innovative solutions and new technology
- apply consultative processes
- choose appropriate operational techniques
- develop and apply construction plans
- apply project scheduling and resource management technology
- calculate of construction resource quantities and project costs
- maintain construction cost records
- provide clarification and advice
- apply negotiation techniques
- apply feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish civil construction plans:

- risk management requirement and procedures
- statutory compliance requirements and procedures
- construction plan development and implementation requirements and procedures
- occupational health and safety requirements and procedures
- environmental requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards

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- industry and organisational construction procedures and practice
- civil construction works options
- sources of information on innovation and new technology
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of civil works projects
- civil construction plant and equipment capabilities
- cost estimation techniques
- construction plan review principles and procedures
- construction plan documentation requirements
- construction plan reporting requirements and procedures
- construction plan approval requirements and procedures
- construction plan records filing requirements and procedures
- performance review requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishment of civil construction plans • implementation of procedures and techniques for the safe, effective and efficient completion of civil construction plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to undertake and complete civil construction plans • consistent and timely completion of civil construction plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of civil construction plans that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete civil construction plans
	  • consistent and timely gaining of approval of

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	civil construction plans • provision of clear, timely required support and advice on the implementation of civil construction plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Civil works construction projects
may include:
	• land clearing
	• bulk earthworks
	• surface drainage works
	• water storage dams construction
	• tailings dams construction
	• topsoil management
	• rehabilitation works
	• road works preparation (including the sub grade)
	• pavement construction, including:
	  • flexible pavements, including:
	• natural pavement materials
	• manufactured pavement materials
	• asphalt placement
	• spray seal application
	• stabilisation
	  • rigid pavement construction
	• underground services construction
	• construction of civil structures
	• tunnelling
	• dredging

Project information may include:	• project designs • project specifications • project site geological data • project site hydrological data

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	• project site engineering survey data • project site meteorological data • project site environmental requirements • community considerations • heritage issues • impact assessment information • available resources • existing project drawings • relevant Australian or other standards
Confirm may include:	• project plans • briefings • handovers • work orders • toolbox meetings • site meetings
Civil construction plans may include:	• risk management requirements and procedures • statutory compliance requirements and procedures • occupational health and safety requirements and procedures • environmental management requirements and procedures • quality requirements and procedures • inspection and testing requirements and procedures • communication and consultation requirements and procedures • community relations requirements and procedures • traffic management requirements and procedures • training requirements and procedures • allocation of responsibilities • position descriptions • administration requirements and procedures, including records and reporting • operational techniques required for the execution of civil works projects • cost management requirements and procedures • client liaison requirements and procedures • construction plan review requirements and procedures • construction plan documentation requirements

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	and procedures
	• construction plan reporting requirements and procedures
	• implementation plan approval requirements and procedures
	• construction plan records filing requirements and procedures
	• performance review requirements and procedures
	• scheduling requirements and procedures
	• resource requirements and procedures
	• production rates requirements and procedures
	• coordination requirements and procedures
	• review requirements
	• communication and reporting requirements
	• drawings
	• ancillary documentation, which may include:
	  • construction notes
	  • construction notes
	  • supplementary drawings
	  • specifications

Monitor may include:	• engineering survey • sampling and testing • recording and observation of construction practice • general supervision
Instructions may include:	• project plans • briefings • handovers • work orders • toolbox meetings • site meetings

Unit Sector(s)

Civil Works (Management and Supervision)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIICWM602A Establish civil works maintenance programs

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment of civil works maintenance programs in Civil Construction. It includes: the requirements to prepare, analyse and plan for; initiate, monitor, adjust and report on the execution of civil works maintenance programs.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, to establish civil works maintenance programs within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for establishing civil works maintenance programs	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the client's requirements for a ***civil works maintenance program*** 1.3. Schedule, initiate and ensure the completion of inspections of assets to classify their serviceability
2. Plan civil works maintenance program	2.1. Classify the condition of assets in terms of their serviceability 2.2. Prioritise maintenance works 2.3. Identify the viable available options for the maintenance program 2.4. Select the preferred options and draft the maintenance program in consultation with relevant team members, which makes best use of the available resources and meets the project requirements 2.5. Identify contingency requirements to be allowed for in the execution of the program 2.6. ***Monitor*** and coordinate the progress of other team members involved in the programming process 2.7. Identify and schedule the resources required for the execution of the maintenance program 2.8. Identify the key performance indicators to be used in the monitoring and assessment of the project performance 2.9. Gain client agreement on maintenance milestones 2.10. Prepare an accurate estimate of the cost of execution of the program in consultation with relevant team members 2.11. Gain approval of the civil works maintenance program 2.12. Document the civil works maintenance program
3. Initiate civil works maintenance programs	3.1. Acquire and make available the necessary ***resources*** for the safe, effective and

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	efficient conduct of the program 3.2. Issue clear and timely ***instructions*** to team members and others involved, for the safe, effective and efficient conduct of the program, to meet the specific task requirements
4. Monitor, adjust and report on the execution of civil works maintenance programs	4.1. Ensure the safe, effective and efficient execution of the program 4.2. Monitor the civil works maintenance program performance to ensure it achieves the required outcomes 4.3. Initiate adjustments to ***civil works maintenance program*** to ensure achievement of ***required outcomes*** 4.4. Provide ongoing clarification and advice to those applying the program to ensure the successful completion of the project 4.5. Ensure reports are complete and submit as required 4.6. Conduct performance review the works maintenance program 4.7. Recommend changes to improve the safety, efficiency and effectiveness of civil works maintenance programming process

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish civil works maintenance programs:

- apply legislative, organisation and site requirements and procedures
- interpret asset plans and drawings
- interpret maintenance program specifications
- interpret maintenance program briefs and contracts
- interpret engineering survey information
- interpret hydrological data
- interpret meteorological data
- interpret geotechnical data
- schedule of inspection programs
- interpret of inspection data
- classify the levels of the serviceability of assets
- prioritise maintenance works
- provide team leadership and coordination
- apply innovative solutions and new technology
- apply consultative processes
- choose appropriate maintenance operational techniques
- develop and apply works maintenance programs
- apply project scheduling and resource management technology
- calculate of maintenance resource quantities and program costs
- maintain maintenance program cost records
- provide clarification and advice
- apply negotiation techniques
- apply feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish civil works maintenance programs:

- risk management requirement and procedures
- statutory compliance requirements and procedures
- works maintenance program development and implementation requirements and procedures

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- occupational health and safety requirements and procedures
- environmental requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards
- inspection program scheduling requirements and procedures
- inspection data interpreting requirements and procedures
- asset condition classification requirements and procedures
- maintenance works prioritisation requirements and procedures
- industry and organisational maintenance procedures and practice
- civil works maintenance options
- sources of information on innovation and new technology
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of civil works maintenance programs
- civil works maintenance plant and equipment capabilities
- cost estimation techniques
- maintenance program review principles and procedures
- maintenance program documentation requirements
- maintenance program reporting requirements and procedures
- maintenance program approval requirements and procedures
- maintenance program records filing requirements and procedures
- performance review requirements and procedures
- principles of road user behaviour

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishment of civil works maintenance programs • implementation of procedures and techniques for the safe, effective and efficient completion of the establishment of civil works maintenance programs • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to undertake and complete the establishment of civil works maintenance programs • consistent and timely completion of civil works maintenance programs
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of civil works maintenance programs that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to undertake and complete the establishment of civil works maintenance programs • consistent and timely gaining of approval of civil works maintenance programs • provision of clear, timely required support and advice on the implementation of civil works maintenance programs
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Civil maintenance projects
may include:
	• surface drainage works
	• water storage dams
	• tailings dams
	• rehabilitation works
	• pavement, including:
	  • flexible pavements, including:
	• natural pavement materials
	• manufactured pavement materials
	• asphalt placement
	• spray seal application
	• stabilisation
	  • rigid pavement
	• underground services
	• civil structures
	• tunnels
	• canals

Civil works maintenance programs may include:	• risk management requirements and procedures • statutory compliance requirements and procedures • occupational health and safety requirements and procedures • environmental management requirements and procedures • quality requirements and procedures • inspection and testing requirements and

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	procedures
	• communication and consultation requirements and procedures
	• community relations requirements and procedures
	• traffic management requirements and procedures
	• training requirements and procedures
	• allocation of responsibilities
	• position descriptions
	• administration requirements and procedures, including records and reporting
	• operational techniques required for the execution of the program
	• cost management requirements and procedures
	• client liaison requirements and procedures
	• maintenance program review requirements and procedures
	• maintenance program documentation requirements and procedures
	• maintenance program reporting requirements and procedures
	• maintenance program implementation plan approval requirements and procedures
	• maintenance program records filing requirements and procedures
	• performance review requirements and procedures
	• scheduling requirements and procedures
	• priority requirements and procedures
	• resource requirements and procedures
	• production rates requirements and procedures
	• coordination requirements and procedures
	• review requirements
	• communication and reporting requirements
	• drawings and specifications
	• ancillary documentation, which may include:
	  • maintenance notes
	  • maintenance notes
	  • supplementary drawings

Monitor may include:	• review of records and reports • general supervision

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Instructions may include:	• program documents • briefings • handovers • work orders • toolbox meetings • site meetings

Unit Sector(s)

Civil Works (Management and Supervision)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIDES301 Inspect, test and maintain diesel engine systems and their ancillary systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the inspection, testing and maintenance of diesel engines systems and their ancillary systems for underground coal mines to provide the means of confirming the effectiveness of their explosion and fire protection and emission control. It includes: planning, preparing for and carrying out diesel engine and their ancillary systems inspection, testing, maintenance and overhaul tasks; and the completion of post work activity requirements

Application of the Unit

This unit is appropriate for those undertaking the inspection, testing and maintenance of diesel engine systems for underground coal mines.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Not applicable.

Pre-qualification:
Metal, mechanical, electrical or automotive trades or mechanical or electrical engineering

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan for inspection, testing and/or maintenance tasks	1.1 Access, interpret and apply ***compliance and other documentation*** relevant to the ***inspection***, ***testing*** and ***maintenance*** of the ***ancillary systems*** of ***diesel engine systems*** 1.2 Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of tasks 1.3 Resolve coordination requirements with ***others*** at the site prior to commencing and during work activities
2. Prepare for inspection, testing and/or maintenance tasks	2.1 ***Inspect and prepare work area*** in **coordination with others** 2.2 Identify and obtain ***items*** and ***tools*** required for the safe, effective and efficient completion of the tasks 2.3 Identify and arrange ***support*** required for completion of tasks 2.4 *Select and use* ***personal protection equipment*** *appropriate to the task* 2.5 Carry out required equipment ***pre-start procedures*** 2.6 Carry out required isolation and lock-out of all equipment necessary for the safe execution of tasks 2.7 Recognise and respond to ***hazardous and emergency situations***

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3. Carry out inspection of diesel engines and their ancillary systems	3.1 Inspect diesel engine systems and their ancillary systems 3.2 Report outcomes of inspection to appropriate person
4. Carry out testing of diesel engines and their ancillary systems	4.1 Select and operate testing equipment and methods 4.2 Carry out safe effective and efficient testing and fault finding of diesel engine systems 4.3 Carry out testing and fault finding of ancillary systems on diesel engine systems 4.4 ***Diagnose*** and record existing or identified faults
5. Carry out routine maintenance of diesel engines and their ancillary systems	5.1 Select and use maintenance items, tools and equipment 5.2 Rectify diagnosed and identified faults 5.3 Carry out ***routine maintenance*** of diesel engine systems and their ancillary systems in accordance with the work requirements 5.4 Carry out maintenance of diesel engine ancillary systems in accordance with the work requirements
6. Carry out the overhaul of diesel engines and their ancillary systems	6.1 Select and use overhaul items, tools and equipment 6.2 Carry out ***overhaul*** of diesel engine systems in accordance with the work requirements and Australian Standards 6.3 Carry out overhaul of ancillary systems on diesel engine systems in accordance with work requirements and Australian Standards
7. Complete post-work activity requirements	7.1 Tidy up work area 7.2 Dispose of used oil, lubricant and other waste 7.3 Return and secure all tools and re-usable items 7.4 Report outcomes of inspection, testing, maintenance and overhaul tasks to appropriate person 7.5 Complete and maintain inspection, testing and maintenance ***records***

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following to inspect, test and maintain diesel engine systems and their ancillary systems: • apply legislative, organisation and site requirements and procedures • apply site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures • apply site and manufacturer's requirements and procedures • apply surface and underground worksite hazard identification and risk management requirements and procedures • apply task hazard identification and risk management requirements and procedures • apply technical literacy • interpret and apply technical and scientific/industry terminology • communicate with those providing support • apply work area and equipment inspection procedures • apply work area safeguarding options and requirements • apply isolation and lock-out requirements and procedures • apply hazard and emergency procedures • apply site service and maintenance reporting requirements and procedures • work wearing appropriate personal protective equipment • apply mechanical trade/engineering skills and experience • use tools for inspection, testing and maintenance
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, to inspect, test and maintain diesel engine systems and their ancillary systems: • site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures • limitations on allowable maintenance including work in hazardous environments • limitations on allowable modifications and the required controls and procedures • site and manufacturer's requirements and procedures • the relative characteristics, performance and suitability for the underground use of common diesel engine types including; • two stroke or four stroke, • directly injected or indirectly injected (pre-combustion), • naturally aspirated or charge boosted (turbocharged or super-charged) intake systems

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- basic type of mechanical fuel delivery systems including;
- distributor type pumps (VE)
- jerk type pumps
- pressure/time type pumps (PT)
- hydraulic injectors (internal pintle)
- basic type of electrical/electronic fuel delivery and engine management systems including;
- unit injectors [HEUI (hydraulic electric unit injectors), MEUI (mechanical electric unit injectors and piezo]
- the effect of increased injection pressure on performance and emissions
- the controls, sensors and management systems integrated into ECMs
- characteristics of materials used in the diesel engine system,
- items required to be used in performance of inspection, testing and maintenance tasks
- tools required for the performance of inspection, testing and maintenance tasks
- provisions of AS/NZS3584.1, 2 and 3 relating to fasteners and joints
- recognise the requirements and performance of various types of fasteners, including bolts, studs, threads and washers
- site inspection, testing and maintenance support requirements and availability
- site work area inspection requirements
- site work area safeguarding options and requirements
- site isolation and lock-out requirements and procedures
- site hazard and emergency procedures
- site inspection, testing and maintenance reporting requirements and procedures
- site inspection, testing and maintenance record procedures
- site requirements and procedures for working in isolation
- site requirements for the use of personal protective equipment

Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • Knowledge of the requirements, procedures and instructions for the inspection, testing and maintenance of diesel engine systems and their ancillary systems • Implementation of requirements, procedures and techniques for the safe, effective and efficient

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	completion of the inspection, testing and maintenance of diesel engine systems and their ancillary systems • Working with others to undertake and complete the inspection, testing and maintenance of diesel engine systems and their ancillary systems that meets all of the required outcomes. • Consistent timely completion of the inspection, testing and maintenance of diesel engine systems and their ancillary systems that safely, effectively and efficiently meets the required outcomes.
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	• This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application

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	using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate: • working with others to undertake and complete the inspection, testing and maintenance of diesel engine systems and their ancillary systems
Guidance information for assessment	• Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Compliance documentation and other documentation may include	• certification documentation • approval documentation • legislative, organisation and site requirements and procedures • manufacturer's specifications and guidelines • Australian Standards, including: AS/NZS3584 and AS 4291 • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Inspection may include:	• checking the marking of parts/components • checking that the diesel engine system and engine compartment is free of loose materials, including coal dust • checking that there are no diesel fuel leaks or leaks of any other flammable liquids • checking that the engine oil level is correct • checking that guards are in place and secure. (e.g. radiator and pulley guards) • checking that the V belts are in place and undamaged • checking that the V belts are correctly tensioned • confirming that the vee belts are fire-resistant and anti-static (FRAS) • check that the vee-belt pulleys are lubricated (if required) • confirming that the engine mountings are secure • inspecting the throttle linkages to ensure that they are in good condition and fully operative • inspecting the fuel injector lines (including common rail, high pressure, lines) to ensure that they are in good condition, properly restrained, protected from abrasion and not showing any signs of wear cracks or leaks • inspecting (visual) that the compressor delivery line is in a good condition, if a flexible hose is used, confirm that it is PTFE/steel wire braid hose • removing hoses from air compressor and inspecting ports, fittings and hoses and ensuring that there is no significant build-up of carbon • checking that the engine sump is secure and undamaged and there is no evidence of oil leaks • checking that the engine crankcase breather is clean

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	and not blocked • confirming that the starter motor is securely mounted
Testing may include:	• conduct surface temperature test and confirm that the location and temperature are within a reasonable tolerance of the information provided on the drawings
Maintenance is:	• the combination of actions carried out to retain a diesel engine system in, or to restore it to, conditions in which it is able to meet the requirements of the relevant specification and perform its required function
Maintenance may include:	• service • adjust • replace • repair • overhaul • modify
Diesel engine ancillary equipment may include:	• air compressors
Diesel engine systems are:	diesel engines for underground coal mines and their: • inlet systems • exhaust systems • cooling systems • starting systems • shut-down and protection systems • electrical or electronic devices
Work requirements may come from briefings, handovers, and work orders and may include:	• nature and scope of tasks • procedures to be applied • quality standards to be applied • available resources • achievement targets • operational conditions • site layout • out-of-bounds areas • designated safe areas • explosion-risk zones • hazardous areas • other hazards and potential hazards • obtaining permits required • worksite inspection requirements • lighting conditions

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	• plant or equipment defects • coordination requirements or issues
Others may include:	• other maintenance personnel • support providers • contractors • under-ground production personnel • mobile or fixed plant operators
Inspect and prepare work area may include:	• determining if the proposed work area is a designated safe area • identification of explosion-risk zones • identification of hazardous areas • identification of hazards, including: • workshop work area hazard • underground work area hazards, and • work activity hazards • fire • explosion • emissions • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection
Items may include:	• authorised replacement parts • fasteners as specified in manufacturer's drawings, which may include: • tensile strength • head and nut configuration • thread form and engagement • corrosion resistance (materials) • coatings (materials and application) • tolerances for fits and threads • tolerances for mating surfaces • dimensions of clearance holes • fixing torques • lubricants and anti-seize compounds used • packing materials
Tools may include:	• hand tools • power tools • special tools • testing equipment

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Support may include:	• other site personnel • contractors • cranes • other lifting equipment
Personal protection equipment may include:	• hard hats • eye protection • hearing protection • breathing apparatus • gas/fume masks • prescribed footwear
Pre-start procedures include checking:	• cleanliness, particularly coal dust • diesel and other flammable liquid leaks • coolant leaks in radiator or radiator hoses • coolant level • that guards are in place and secure • engine oil level is correct
Hazardous and emergency situations may include:	• working alone • personal injury • fire • explosions • emissions • electrical • noise • dust • noxious gases • environmental • chemical
Diagnose faults may include:	• root cause analysis • troubleshooting techniques
Routine maintenance is to include:	• servicing, including: • cleaning • checking and filling lubricants, fuel and water • draining the fuel/water separator • draining all air receivers and water separators • emptying filters fitted to the pneumatic system • filling the pneumatic system lubricator • adjusting • changing (replacing), including • fuel filters • engine-oil and filter • pneumatic air filters

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Overhaul may include:	• removal • dismantling • cleaning • inspecting • replacing, eg: • gaskets • fasteners • testing, including: • flatness • measuring dimensions • hydrostatic • reassembly • reinstallation
Records may include:	• inspection and test results • defect identified • defect rectification carried out • item consumed • hazard/risk management reports

Unit Sector(s)

Coal Mining (Diesel Engine Systems Maintenance)

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RIIDES302 Inspect, test and maintain joints on diesel engine systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the inspection, testing and maintenance of joints on diesel engine systems for underground coal mines to provide the means of confirming the effectiveness of their explosion and fire protection and emission control. It includes: planning and preparing for and inspection, testing, routine maintenance and overhaul tasks on joints; and the completion of post-work requirements

Application of the Unit

This unit is appropriate for those undertaking the inspection, testing and maintenance of diesel engine systems for underground coal mines

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Metal, mechanical, electrical or automotive trades or mechanical or electrical engineering

Employability Skills Information

This unit contains employability skills

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan for inspection, testing and/or maintenance tasks	1.1 Access, interpret and apply ***compliance and other documentation*** relevant to the ***inspection***, ***testing*** and ***maintenance*** of ***joints*** on ***diesel engine systems*** 1.2 Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of tasks 1.3 Resolve coordination requirements with ***others*** at the site prior to commencing and during work activities
2. Prepare for inspection, testing and/or maintenance tasks	2.1 ***Inspect and prepare work area*** in **coordination with others** 2.2 Identify and obtain ***items*** **and** ***tools*** required for the safe, effective and efficient conduct of the tasks. 2.3 Identify and arrange ***support*** required completion of the tasks 2.4 *Select and use* ***personal protection equipment*** *appropriate to the task* 2.5 Carry out equipment ***pre-start procedures*** 2.6 Carry out required isolation and lock-out of all equipment necessary for the safe execution of tasks 2.7 Recognise and respond to ***hazardous and emergency situations***
3. Carry out inspection of diesel engine system joints	3.1 Carry out inspection and fault finding of joints on fixed connections for the effectiveness of their explosion and fire protection 3.2 Carry out inspection and fault finding of open joints for the effectiveness of their explosion and fire protection 3.3 ***Diagnose*** and record existing or identified faults
4. Carry out testing of diesel engine system joints	4.1 Select and operate testing equipment and methods 4.2 Carry out testing of joints on fixed connections for effectiveness of explosion and fire protection

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	4.3 Carry out testing of open joints for the effectiveness of explosion and fire protection 4.4 Identify and record existing or potential faults
5. Carry out routine maintenance of diesel engine system joints	5.1 Select and use maintenance items, tools and equipment Rectify diagnosed and identified faults 5.2 Carry out ***routine maintenance*** of joints on fixed connections to ensure effectiveness of their explosion and fire protection 5.3 Carry out routine maintenance of open joints for the effectiveness of their explosion and fire protection
6. Carry out the overhaul of diesel engine systems joints	6.1 Select and use ***overhaul*** items, tools and equipment 6.2 Carry out overhaul of joints on diesel engine systems in accordance with the work requirements and Australian Standards 6.3 Recognise and respond to ***hazardous and emergency situations***
7. Complete post-work activity requirements	7.1 Tidy up the work area 7.2 Dispose of used oil, lubricant and other waste 7.3 Return and secure all tools and re-usable items 7.4 Report outcomes of inspection, testing, maintenance and overhaul tasks to appropriate person 7.5 Complete and maintain inspection, testing and maintenance ***records***

Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to safely, effectively and efficiently inspect, test and maintain joints on diesel engine systems: • apply legislative requirements and procedures • apply surface and underground worksite hazard identification and risk management requirements and procedures • apply task hazard identification and risk management requirements and procedures • apply hazard and emergency procedures • apply site health and safety requirements and procedures • apply site environmental requirements and procedures

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- apply site quality requirements and procedures
- apply site communication requirements and procedures
- apply manufacturer's requirements and procedures
- apply technical literacy
- interpret and apply technical and scientific/industry terminology
- communicate with those providing support
- apply work area and equipment inspection procedures
- apply work area safeguarding options and requirements
- apply isolation and lock-out requirements and procedures
- apply site service and maintenance reporting requirements and procedures
- apply inspection requirements and procedures
- apply testing requirements and procedures
- apply fault finding techniques
- apply maintenance requirements and procedures
- work wearing appropriate personal protective equipment
- use tools for inspection, testing and maintenance
- use measuring instruments

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used.

This includes knowledge of the following, as required to safely, effectively and efficiently inspect, test and maintain joints on diesel engine systems:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- site and manufacturer's requirements and procedures
- potential hazards in the use of diesel engine systems
- including:
- explosions
- fire
- emissions
- limitations on allowable maintenance, including:
- service
- adjust
- replace
- repair
- overhaul
- work in hazardous environments
- limitations on allowable modifications and their required controls and procedures
- tools and measuring instruments required for the performance of inspection, testing and maintenance tasks
- the types of and functionality of joints that may be integral to the design and maintenance of

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a diesel engine system, including; • fixed connection • open joints • the requirements for interposed gaskets and seals in joints, including • materials • dimensions • form and shape • provisions of AS/NZS3584.1, 2 and 3 relating to fasteners and joints • recognise the requirements and performance of various types of fasteners, including bolts, studs, threads and washers • site inspection, testing and maintenance support requirements and availability • site work area inspection requirements • site work area safeguarding options and requirements • site isolation and lock-out requirements and procedures • site hazard and emergency procedures • site inspection, testing and maintenance reporting requirements and procedures • site inspection, testing and maintenance record procedures • site requirements and procedures for working in isolation • site requirements for the use of personal protective equipment

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Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the inspection, testing and maintenance of joints on diesel engine systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the inspection, testing and maintenance of joints on diesel engine systems • working with others to undertake and complete the inspection, testing and maintenance of joints on diesel engine systems that meets all of the required outcomes • consistent timely completion of the inspection, testing and maintenance of joints on diesel engine systems that safely, effectively and efficiently meets the required outcomes

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Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate: • working with others to undertake and complete the inspection, testing and maintenance of joints on diesel engine systems

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Guidance information for assessment	• Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Compliance and other documentation may include:	• certification documentation • approval documentation • legislative, organisation and site requirements and procedures • manufacturer's specifications and guidelines • Australian Standards, including: AS/NZS3584 and AS 4291 • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Inspection may include:	• checking the marking of parts/components • visually check that the fasteners securing explosion-protected joints are in place and correctly located, including: • nuts • bolts • studs • confirmation of the dimensional, flatness and surface finish conformance of all joint mating parts • confirmation of the conformance of all threaded holes and fasteners to drawings and specifications
Testing may include:	• testing the accessible external open joints (flamepaths) for compliance with the manufacturer's specification and the drawings for maximum gap • testing accessible external fixed connections for gas tightness in a manner recommended by the manufacturer • correct tightening torque of all fasteners. • conducting gas tightness tests for all joints within the exhaust system • conducting gas tightness tests for all joints within the intake system
Maintenance is:	• the combination of actions carried out to retain a diesel engine system in, or to restore it to, conditions in which it is able to meet the requirements of the

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	relevant specification and perform its required function
Maintenance may include authorised:	• service • adjusting • replacing • repair • overhaul • modification
Joints may include:	• fixed connections, including: • metallic and/or flameproof gaskets • o-rings on fuel systems • open joints, including: • valve stems and valve guides • intake and exhaust flametraps • water injection nozzles • turbo-charger and/or supercharger, where flame trap is fitted to inlet side • fuel injectors
Diesel engine systems are:	diesel engines for underground coal mines and their: • inlet systems • exhaust systems • cooling systems • starting systems • shut-down and protection systems • electrical or electronic devices
Work requirements may come from briefings, handovers, and work orders and may include:	• nature and scope of tasks • procedures to be applied • quality standards to be applied • available resources • achievement targets • operational conditions • site layout • out-of-bounds areas • designated safe areas • explosion-risk zones • hazardous areas • other hazards and potential hazards • obtaining permits required • worksite inspection requirements • lighting conditions • plant or equipment defects

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	• coordination requirements or issues
Others may include:	• other maintenance personnel • support providers • contractors • under-ground production personnel • mobile or fixed plant operators
Inspect and prepare work area may include:	• determining if the proposed work area is a designated safe area • identification of explosion-risk zones • identification of hazardous areas • identification of hazards, including: • workshop work area hazard • underground work area hazards, and • work activity hazards • fire • explosion • emissions • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection
Items may include:	• authorised replacement parts • fasteners as specified in manufacturer’s drawings, including: • tensile strength • head and nut configuration • thread form and engagement • corrosion resistance (materials) • coatings (materials and application) • tolerances for fits and threads • tolerances for mating surfaces • dimensions of clearance holes • fixing torques • lubricants and anti-seize compounds used • packing materials
Tools may include:	• hand tools • power tools • special tools
Support may include:	• other site personnel • contractors

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	• cranes • other lifting equipment
Personal protection equipment may include:	• hard hats • eye protection • hearing protection • breathing apparatus • gas/fume masks • prescribed footwear
Pre-start procedures include:	• checking: • cleanliness, particularly coal dust • diesel and other flammable liquid leaks • coolant leaks in radiator or radiator hoses • coolant level • that guards are in place and secure • engine oil level is correct • conduct exhaust conditioner/flametrap, low-water, shutdown tests
Hazardous and emergency situations may include:	• working alone • personal injury • fire • explosions • emissions • electrical • noise • dust • noxious gases • environmental • chemical
Diagnose faults may include:	• root cause analysis • troubleshooting techniques
Routine maintenance is to include:	• servicing, including cleaning • adjusting • replacing
Overhaul may include:	• removal • dismantling • cleaning • inspecting • replacing, eg: • gaskets • fasteners • testing, including:

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	• flatness • measuring dimensions • hydrostatic • reassembly • reinstallation
Records may include:	• inspection and test results • defect identified • defect rectification carried out • item consumed • hazard/risk management reports

Unit Sector(s)

Coal Mining (Diesel Engine Systems Maintenance)

Custom Content Section

Not applicable.

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RIIDES303 Inspect, test and maintain cooling systems on diesel engine systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the inspection, testing and maintenance of cooling systems of diesel engine systems for underground coal mines to provide the means of confirming their effectiveness. It includes: preparing for and carrying out cooling systems inspection, testing and maintenance tasks; and the completion of post-work requirements

Application of the Unit

This unit is appropriate for those undertaking the inspection, testing and maintenance of diesel engine systems for underground coal mines.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Metal, mechanical, electrical or automotive trades or mechanical or electrical engineering

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan for inspection, testing and/or maintenance tasks	1.1 Access, interpret and apply ***compliance and other documentation*** relevant to the ***inspection***, ***testing*** and ***maintenance*** of ***cooling systems*** on ***diesel engine systems*** 1.2 Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of tasks 1.3 Resolve coordination requirements with ***others*** at the site prior to commencing and during work activities
2. Prepare for inspection, testing and/or maintenance tasks	2.1 ***Inspect and prepare work area*** in ***coordination with others*** 2.2 Identify and obtain ***items*** and ***tools*** required for the safe, effective and efficient conduct of the tasks 2.3 Identify and arrange ***support*** required for the safe, effective and efficient completion of the tasks 2.4 Select and use ***personal protection equipment*** appropriate to the task 2.5 Carry out required equipment ***pre-start and inspection procedures*** 2.6 Carry out isolation and lock-out of all equipment necessary for the safe execution of tasks 2.7 Recognise and respond to ***hazardous and emergency situations***
3. Carry out inspection of cooling systems	3.1 Inspect cooling systems on diesel engine systems 3.2 ***Diagnose*** and record existing or identified faults 3.3 Report outcomes of inspection to appropriate person
4. Carry out testing of cooling systems	4.1 Select and operate testing equipment and methods 4.2 Carry out testing and fault finding of cooling systems 4.3 Diagnose and record existing identified faults 4.4 Recognise and respond to ***hazardous and emergency situations***

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	4.5 Report outcomes of testing to appropriate person
5. Carry out maintenance of cooling systems	5.1 Select and use maintenance items, tools and equipment 5.2 Rectify diagnosed and identified faults 5.3 Carry out maintenance of cooling systems on diesel engine systems in accordance with the work requirements 5.4 Recognise and respond to hazardous and emergency situations
6. Complete post-work activity requirements	6.1 Tidy up the work area 6.2 Dispose of used oil, lubricant and other waste 6.3 Return and secure all tools and re-usable items 6.4 Complete and maintain inspection, testing and maintenance ***records***

Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to inspect, test and maintain cooling systems on diesel engine systems: • apply legislative, organisation and site requirements and procedures • apply site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures • apply site and manufacturer's requirements and procedures • apply surface and underground worksite hazard identification and risk management requirements and procedures • apply task hazard identification and risk management requirements and procedures • apply technical literacy • interpret and apply technical and scientific/industry terminology • communicate with those providing support • apply work area and equipment inspection procedures • apply work area safeguarding options and requirements • apply isolation and lock-out requirements and procedures • apply hazard and emergency procedures • apply site service and maintenance reporting requirements and procedures • work wearing appropriate personal protective equipment • use tools for inspection, testing and maintenance

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- use calibrated/verified instruments

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used.

This includes knowledge of the following, as required to inspect, test and maintain cooling systems on diesel engine systems:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- limitations on allowable maintenance including work in hazardous environments
- limitations on allowable modifications and the required controls and procedures
- provisions of AS/NZS3584.1, 2 and 3 relating to fasteners and joints
- recognise the requirements and performance of various types of fasteners, including bolts, studs, threads and washers
- site and manufacturer’s requirements and procedures
- items required to be used in performance of inspection, testing and maintenance tasks
- tools required for the performance of inspection, testing and maintenance tasks
- site inspection, testing and maintenance support requirements and availability
- site work area inspection requirements
- site work area safeguarding options and requirements
- site isolation and lock-out requirements and procedures
- site hazard and emergency procedures
- critical temperatures and explosion limits for gasses, dusts and hydro-carbon liquids that may be encountered by a diesel engine system in an underground coal mines, including;
- coal dust
- methane
- diesel fuel
- margins of safety provided by all relevant Legislation, Regulation, Standards and Guidelines are applied to surface and exhaust gas temperatures
- methods to limit temperatures including; maintenance, testing and monitoring for;
- exhaust manifold design & fitment
- adaptor pipe
- exhaust flametrap and/or cooler
- turbochargers
- air compressors
- possible failure modes maintenance procedures and practices required to provide controls
- causes of temperature rise as a gas is compressed, including:
- intake system to air compressors and failure modes resulting in excessive temperatures
- output side of air compressors and failure modes resulting in excessive temperatures
- risks and consequences of carbon build-up in the air stream (fittings, valves and hoses) types of heat exchange including;
- shell and tube

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- plate
- plate and fin
- causes of the degradation of heat exchanger performance, caused by;
- build up of the products of combustion on the ‘gas’ side of heat exchangers
- build up of salts, chlorides and other materials on the ‘coolant’ side of heat exchangers
- temperature controls applied to prevent the exhaust gas stream from exceeding nominate maximum temperatures
- materials including elastomeric hoses, metallic and synthetic fittings employed in critical components subject to temperature rise under the designed conditions of operation
- automatic shutdown controls, which may include;
- the design of the system and the ‘safety margin’ provided in the design for some deterioration in performance
- coolant flow monitoring devices
- coolant temperature monitoring devices
- coolant loss monitoring devices
- direct exhaust gas temperature monitoring devices
- water-bath level monitoring devices
- site inspection, testing and maintenance reporting requirements and procedures
- site inspection, testing and maintenance record procedures
- site requirements and procedures for working in isolation
- site requirements for the use of personal protective equipment

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Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • Knowledge of the requirements, procedures and instructions for the inspection, testing and maintenance of cooling systems on diesel engine systems. • Implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the inspection, testing and maintenance of cooling systems on diesel engine systems • Working with others to undertake and complete the inspection, testing and maintenance of cooling systems on diesel engine systems that meets all of the required outcomes. • Consistent timely completion of the inspection, testing and maintenance of cooling systems on diesel engine systems that safely, effectively and efficiently meets the required outcomes.
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate: • working with others to undertake and complete the inspection, testing and maintenance of cooling systems on diesel engine systems
Guidance information for assessment	• Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Compliance and other documentation may include:	• certification documentation, or • approval documentation • legislative, organisation and site requirements and procedures • manufacturer's specifications and guidelines • Australian Standards, including: AS/NZS3584 and AS 4291 • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Inspection is to include:	• checking for coolant leaks in radiator (core and tanks) and radiator hoses • visually check that the coolant level is correct • checking for coolant leaks in water pumps,

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	thermostats (housing) or from hoses associated with the jacket water cooling of air compressors, manifolds, manifold/conditioner adaptor pipes, etc • checking that the hoses are in a good condition, correctly fitted, clamped and restrained • checking that the radiator core is clean
Testing may include:	• checking the proper operation and function of the coolant loss detection sensor, and record the time taken to cause the engine to shut down • Checking the proper operation and function of the coolant over-temperature sensor, and record the coolant temperature at which the engine shut down. NOTE Testing this sensor by defeating other sensors and overheating the diesel engine system may be hazardous or cause damage to the diesel engine system. It is recommended that the sensor be removed from the engine and tested in heated water while remaining connected to the engine shutdown system.
Maintenance is:	• the combination of actions carried out to retain a diesel engine system in, or to restore it to, conditions in which it is able to meet the requirements of the relevant specification and perform its required function
Maintenance is to include:	• service • adjust • replace
Maintenance may include:	• repair • overhaul • modify • draining and replacing the engine coolant and ensuring that the correct coolant formulation is used
Cooling systems may include:	• exhaust manifolds • compressors or turbo chargers • piping • joints • exhaust flame traps • exhaust filters
Diesel engine systems are:	diesel engines for underground coal mines and their: • inlet systems • exhaust systems • cooling systems • starting systems

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	• shut-down and protection systems • electrical or electronic devices
Work requirements may come from briefings, handovers, and work orders and may include:	• service and maintenance schedules • production requirements • nature and scope of tasks • achievement targets • operational conditions • operational requirements • site layout and out of bounds areas • worksite inspection requirements • plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Others may include:	• yard persons • processing plant operators • mobile plant operators • other maintenance personnel
Inspect and prepare work area may include:	• determining if the proposed work area is a designated safe area • identification of hazards, including: • workshop work area hazard • underground work area hazards, and • work activity hazards • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection
Items may include:	• replacement parts • fasteners • packing materials
Tools may include:	• hand tools • power tools • special tools • testing equipment
Support may include:	• other site personnel • contractors • cranes • other lifting equipment
Personal protection equipment may	• hard hats

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include:	• eye protection • hearing protection • breathing apparatus • gas/fume masks • prescribed footwear
Pre-start and inspection procedures include:	• checking: • cleanliness, particularly coal dust • diesel and other flammable liquid leaks • coolant leaks in radiator or radiator hoses • coolant level • that guards are in place and secure • engine oil level is correct • conduct Exhaust Conditioner/Flametrap, low-water, shutdown tests
Hazardous and emergency situations may include:	• working alone • personal injury • fire • explosions • electrical • noise • dust • environmental • chemical
Diagnose faults may include:	• Root cause analysis • Troubleshooting techniques
Records may include:	• inspection and test results • defect identified • defect rectification carried out • item consumed • hazard/risk management reports

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Unit Sector(s)

Coal Mining (Diesel Engine Systems Maintenance)

Custom Content Section

Not applicable.

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RIIDES304 Inspect, test and maintain inlet systems on diesel engine systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the inspection, testing and maintenance of inlet systems of diesel engine systems for underground coal mines to confirm the integrity of explosion and fire protection and emission control.

Application of the Unit

This unit is appropriate for those undertaking the inspection, testing and maintenance of diesel engine systems for underground coal mines

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Metal, mechanical, electrical or automotive trades or mechanical or electrical engineering

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan for inspection, testing and/or maintenance tasks	1.1 Access, interpret and apply ***compliance and other documentation*** relevant to the ***inspection***, ***testing*** and ***maintenance*** of ***inlet systems*** on ***diesel engine systems*** 1.2 Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of tasks 1.3 Resolve coordination requirements with ***others*** at the site prior to commencing and during work activities
2. Prepare for inspection, testing and/or maintenance tasks	2.1 ***Inspect and prepare work area*** in ***coordination with others*** 2.2 Identify and obtain ***items*** **and** ***tools*** required for the safe, effective and efficient conduct of the tasks. 2.3 Identify and arrange ***support*** required for completion of tasks 2.4 Select and use ***personal protection equipment*** appropriate to the task 2.5 Carry out required equipment ***pre-start procedures*** 2.6 Carry out required isolation and lock-out of all equipment necessary for the safe execution of tasks 2.7 Recognise and respond to ***hazardous and emergency situations***
3. Carry out inspection of inlet systems	3.1 Carry out inspection of inlet systems on diesel engine systems 3.2 Carry out the inspection of inlet system flame traps for effectiveness of explosion protection 3.3 Carry out the inspection of inlet system joints for effectiveness of explosion and fire protection 3.4 ***Diagnose*** and record existing or identified faults, including blockages and constrictions
4. Carry out testing of inlet systems	4.1 Select and operate testing equipment and methods 4.2 Carry out testing and fault finding of inlet systems on diesel engine systems

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	4.3 Carry out testing and fault finding of inlet system flame traps to ensure effectiveness of explosion protection 4.4 Carry out leak testing and fault finding of inlet system joints to ensure effectiveness of explosion and fire protection 4.5 Carry out testing of the operation of any ***forced induction systems*** to confirm their correct operation 4.6 Identify and record existing or potential faults, including blockages and constrictions
5. Carry out routine maintenance of inlet systems	5.1 Select and use maintenance items, tools and equipment 5.2 Rectify diagnosed and identified faults 5.3 Carry out ***routine maintenance*** of inlet systems on diesel engine systems in accordance with the work requirements 5.4 Carry out routine maintenance of inlet system flame traps to ensure effectiveness of explosion protection 5.5 Carry out routine maintenance of inlet system joints to ensure effectiveness of explosion and fire protection
6. Carry out the overhaul of inlet systems	6.1 Select and use overhaul items, tools and equipment 6.2 Carry out ***overhaul*** of inlet systems on diesel engine systems in accordance with work requirements and Australian Standards
7. Complete post-work activity requirements	7.1 Tidy up the work area 7.2 Dispose of used oil, lubricant and other waste 7.3 Return and secure all tools and re-usable items 7.4 Report outcomes of inspection, testing, maintenance and overhaul tasks to appropriate person 7.5 Complete and maintain inspection, testing and maintenance ***records***

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following to safely, effectively and efficiently inspect, test and maintain inlet systems on diesel engine systems: • apply legislative requirements and procedures • apply surface and underground worksite hazard identification and risk management requirements and procedures • apply task hazard identification and risk management requirements and procedures • apply technical literacy • interpret and apply technical and scientific/industry terminology • apply hazard and emergency procedures • apply site health and safety requirements and procedures • apply site environmental requirements and procedures • apply site quality requirements and procedures • apply site communication requirements and procedures • apply manufacturer's requirements and procedures • communicate with those providing support • apply work area and equipment inspection procedures • apply work area safeguarding options and requirements • apply isolation and lock-out requirements and procedures • apply site service and maintenance reporting requirements and procedures • apply inspection requirements and procedures • apply testing requirements and procedures • apply fault finding techniques • apply maintenance requirements and procedures • work wearing appropriate personal protective equipment • select appropriate bolts, studs, threads and washers to specific applications within a diesel engine system • use tools • use calibrated/verified instruments
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following to safely, effectively and efficiently inspect, test and maintain inlet systems on diesel engine systems: • site risk, statutory compliance, health, safety, environmental, quality, (including quality information), and communication requirements and procedures

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- use of site & manufacturer's requirements and procedures
- provisions of AS/NZS3584.2 and 3 relating to inlet systems flametraps (for explosion protected diesel engine systems)
- the failure modes of the inlet system that may affect the explosion protection characteristics and the emissions from diesel engine systems
- potential hazards in the use of diesel engine systems including:
- explosions
- fire, and
- emissions
- the relative performance (including emissions) of increased air induction systems
- systems for the reduction of the harmful emissions from diesel engines
- functions of the management and treatment systems and principles employed to limit the creation of and to manage harmful emissions from diesel engines
- the function, performance criteria and protection employed in inlet (induction) systems, including;
- function
- features, including;
- fire-protection
- explosion protection
- emergency stop
- fitment (including location)
- induction boosted considerations, including:
- temperature considerations
- the effect on emissions
- the effect on performance
- the effect of induction cooling (after cooling)
- inlet filters
- the features and the requirements for maintenance of the inlet manifold, including;
- function,
- features, and
- fitment (including the requirements for gaskets and seals)
- requirements and test requirements for inlet flametraps and the issues related to;
- fitting assemblies into housings
- maintenance (including cleaning)
- routine inspection
- types of flametraps permitted and the performance features of each type
- the types of joints that may be integral to the design and maintenance of a diesel engine system, including;
- fixed connection
- open joints
- the requirements for interposed gaskets and seals in joints, including
- materials
- dimensions

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- form and shape
- limitations on allowable maintenance, including:
- service
- adjust
- replace
- repair
- overhaul
- work in hazardous environments
- limitations on allowable modifications and their required controls and procedures
- items required to be used in performance of inspection, testing and maintenance tasks
- tools required for the performance of inspection, testing and maintenance tasks
- provisions of AS/NZS3584.1, 2 and 3 relating to fasteners and joints
- recognise the requirements and performance of various types of fasteners, including bolts, studs, threads and washers
- site inspection, testing and maintenance support requirements and availability
- site work area inspection requirements
- site work area safeguarding options and requirements
- site isolation and lock-out requirements and procedures
- site hazard and emergency procedures
- site inspection, testing and maintenance reporting requirements and procedures
- site inspection, testing and maintenance record procedures
- site requirements and procedures for working in isolation
- site requirements for the use of personal protective equipment

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Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the inspection, testing and maintenance of inlet systems on diesel engine systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the inspection, testing and maintenance of inlet systems on diesel engine systems • working with others to undertake and complete the inspection, testing and maintenance of inlet systems on diesel engine systems that meets all of the required outcomes • consistent timely completion of the inspection, testing and maintenance of inlet systems on diesel engine systems that safely, effectively and efficiently meets the required outcomes.
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate: • working with others to undertake and complete the inspection, testing and maintenance of inlet systems on diesel engine systems
Guidance information for assessment	• Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Compliance and other documentation may include::	• certification documents • registration documents • legislative, organisation and site requirements and procedures • manufacturer's specifications, drawings, instructions and guidelines • Australian Standards, including: AS/NZS3584, and AS 4291 • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Inspection may include:	• checking the marking of parts/components • determining the air filter element is clean • inspecting the inlet flametrap for cleanliness damage

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	or deterioration (clean or replace as required) • checking materials and gaskets/seals • the conformity of threads and fasteners to registration and/or certification drawings
Testing may include:	• testing inlet flametrap for cleanliness damage or deterioration • conducting gas tightness tests for all joints within the inlet system • measurement of joints for dimensional compliance, surface finish, flatness
Maintenance is:	• the combination of actions carried out to retain a diesel engine system in, or to restore it to, conditions in which it is able to meet the requirements of the relevant specification and perform its required function
Maintenance may include authorised:	• service • adjusting • replacing • repair • overhaul • modification
Inlet systems may be referred to as induction systems and may be:	• naturally aspirated • induction boosted: • turbo-charged • super-charged
Inlet systems include:	• air filtration • inlet flametrap • inlet manifold • pipe-work and hoses • joints
Inlet systems may include:	• turbo-charger, or • super-charger, and • strangler valve • gas systems • intercoolers or after coolers
Diesel engine systems are:	diesel engines for underground coal mines and their: • inlet systems • exhaust systems • cooling systems • starting systems • shut-down and protection systems

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	• electrical or electronic devices
Work requirements may come from briefings, handovers, and work orders and may include:	• nature and scope of tasks • procedures to be applied • quality standards to be applied • available resources • achievement targets • operational conditions • site layout • out-of-bounds areas • designated safe areas • explosion-risk zones • hazardous areas • other hazards and potential hazards • obtaining permits required • worksite inspection requirements • lighting conditions • plant or equipment defects • coordination requirements or issues
Others may include:	• other maintenance personnel • support providers • contractors • under-ground production personnel • mobile or fixed plant operators
Inspect and prepare work area may include:	• determining if the proposed work area is a designated safe area • identification of explosion-risk zones • identification of hazardous areas • identification of hazards, including: • workshop work area hazard • underground work area hazards • work activity hazards • fire • explosion • emissions • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection
Items may include:	• authorised replacement parts • fasteners as specified in manufacturer’s drawings,

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	which may include: • tensile strength • head and nut configuration • thread form and engagement • corrosion resistance (materials) • coatings (materials and application) • tolerances for fits and threads • tolerances for mating surfaces • dimensions of clearance holes • fixing torques • lubricants and anti-seize compounds used • packing materials
Tools may include:	• hand tools • power tools • special tools • testing equipment
Support may include:	• other site personnel • contractors • cranes • other lifting equipment
Personal protection equipment may include:	• hard hats • eye protection • hearing protection • breathing apparatus • gas/fume masks • prescribed footwear
Pre-start procedures include:	• checking: • cleanliness, particularly coal dust • diesel and other flammable liquid leaks • coolant leaks in radiator or radiator hoses • coolant level • that guards are in place and secure • engine oil level is correct • conduct exhaust conditioner/flametrap, low-water, shutdown tests
Hazardous and emergency situations may include:	• working alone • personal injury • fire • explosions • emissions • electrical

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	• noise • dust • noxious gases • environmental • chemical
Fault diagnosis may include:	• root cause analysis • troubleshooting techniques
Forced induction systems may include:	• super-charging • turbo-charging
Routine maintenance is to include:	• servicing, including: • cleaning, including: • emptying air intake pre-cleaner • cleaning air filter elements • cleaning air intake flametraps • checking and filling lubricants, fuel and water • adjusting • replacing, including: • air intake pre-cleaner • air filter elements • cleaned or new air intake flametraps
Overhaul may include:	• removal • dismantling • cleaning • inspecting • replacing, eg: • gaskets • fasteners • testing, including: • flatness • measuring dimensions • hydrostatic • reassembly • reinstallation
Records may include:	• inspection and test results • defect identified • defect rectification carried out • item consumed • hazard/risk management reports

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Unit Sector(s)

Coal Mining (Diesel Engine Systems Maintenance)

Custom Content Section

Not applicable.

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RIIDES305 Inspect, test and maintain exhaust systems on diesel engine systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the inspection, testing and maintenance of exhaust systems of diesel engine systems for underground coal mines to provide a means of confirming the effectiveness of their explosion and fire protection and emission control. It includes: planning and preparing for and carrying out of exhaust system inspection, testing, routine maintenance and overhaul tasks; and the completion of post-work requirements

Application of the Unit

This unit is appropriate for those undertaking the inspection, testing and maintenance of diesel engine systems for underground coal mines

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Metal, mechanical, electrical or automotive trades or mechanical or electrical engineering

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan for inspection, testing and/or maintenance tasks	1.1 Access, interpret and apply ***compliance and other documentation*** relevant to the ***inspection***, ***testing*** and ***maintenance*** of ***exhaust systems*** on ***diesel engine systems*** 1.2 Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of tasks 1.3 Resolve coordination requirements with ***others*** at the site prior to commencing and during work activities
2. Prepare for inspection, testing and/or maintenance tasks	2.1 ***Inspect and prepare work area*** in ***coordination with others*** 2.2 Identify and obtain ***items*** **and** ***tools*** required for the safe, effective and efficient conduct of the tasks. 2.3 Identify and arrange ***support*** required for completion of tasks 2.4 Select and use ***personal protection equipment*** appropriate to the task 2.5 Carry out required equipment ***pre-start procedures*** 2.6 Carry out required isolation and lock-out of all equipment necessary for the safe execution of tasks 2.7 Recognise and respond to ***hazardous and emergency situations***
3. Carry out inspection of exhaust systems	3.1 Carry out inspection of exhaust systems on diesel engine systems 3.2 Carry out inspection and fault finding of exhaust system flame traps for effectiveness of explosion protection 3.3 Carry out inspection and fault finding of exhaust gas cooling systems 3.4 Carry out inspection and fault finding of exhaust system joints 3.5 ***Diagnose*** and record existing or identified faults
4. Carry out testing of	4.1 Select and operate testing equipment and methods in an

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exhaust systems	appropriate, safe, effective and efficient manner 4.2 Carry out ***testing*** and fault finding of exhaust systems on diesel engine systems 4.3 Carry out testing of exhaust system flametraps for effectiveness of explosion and fire protection 4.4 Carry out leak testing of exhaust system joints for effectiveness of explosion and fire protection 4.5 Test and report on the performance of exhaust emission treatment devices 4.6 Identify and record existing or potential faults, including blockages and constrictions
5. Carry out routine maintenance of exhaust systems	5.1 Select and use maintenance items, tools and equipment 5.2 Rectify diagnosed and identified faults 5.3 Carry out ***routine maintenance*** of exhaust systems on diesel engine systems in accordance with the work requirements 5.4 Carry out routine maintenance of exhaust system flametraps for effectiveness of explosion protection 5.5 Carry out routine maintenance of exhaust system joints for effectiveness of explosion and fire protection
6. Carry out the overhaul of exhaust systems	6.1 Select and use overhaul items, tools and equipment 6.2 Carry out ***overhaul*** of exhaust systems in accordance with the work requirements and Australian Standards
7. Complete post-work activity requirements	7.1 Tidy up the work area 7.2 Dispose of used oil, lubricant and other waste 7.3 Return and secure all tools and re-usable items 7.4 Report outcomes of inspection, testing, maintenance and overhaul tasks to appropriate person 7.5 Complete and maintain inspection, testing and maintenance ***records***

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following to safely, effectively and efficiently inspect, test and maintain exhaust systems on diesel engine systems: • apply legislative requirements and procedures • apply surface and underground worksite hazard identification and risk management requirements and procedures • apply task hazard identification and risk management requirements and procedures • apply hazard and emergency procedures • apply technical literacy • interpret and apply technical and scientific/industry terminology • identify health effects of emissions and nominate controls to minimise potential health effects • apply site health and safety requirements and procedures • apply site environmental requirements and procedures • apply site quality requirements and procedures • apply site communication requirements and procedures • apply manufacturer’s requirements and procedures • communicate with those providing support • apply work area and equipment inspection procedures • apply work area safeguarding options and requirements • apply isolation and lock-out requirements and procedures • apply site service and maintenance reporting requirements and procedures • apply inspection requirements and procedures • apply testing requirements and procedures • apply fault finding techniques • apply maintenance requirements and procedures • work wearing appropriate personal protective equipment • use tools for inspection, testing and maintenance • use calibrated/verified instruments
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following to safely, effectively and efficiently inspect, test and maintain exhaust systems on diesel engine systems: • site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures

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- site and manufacturer's requirements and procedures
- provisions of AS/NZS3584.1,2 and 3 relating to exhaust systems, fasteners, joints and flametraps
- potential hazards in the use of diesel engine systems in underground coal mines, including:
- explosions
- fire, and
- emissions
- limitations on allowable maintenance, including:
- service
- adjust
- replace
- repair
- overhaul
- work in hazardous environments
- limitations on allowable modifications and their required controls and procedures
- methods to limit surface temperatures for;
- exhaust manifold design and fitment
- adaptor pipe
- possible failure modes in maintenance procedures and practices required to provide controls (including, flametraps, cooling systems, treatment systems, filtration)
- the heat energy generating characteristics of forced induction systems and the control measures provided to manage surface temperatures, including; maintenance, testing and monitoring
- causes of the degradation of heat exchanger performance;
- function and performance criteria and protection employed in exhaust, including;
- cooling
- flametrap
- spark arrestor
- emissions reduction
- fire-protection
- explosion protection
- types of flametraps permitted by the relevant Standard, including;
- water-based flametraps
- positive flametraps
- properties and functional characteristics of exhaust flametraps, including;
- positive flametraps
- water-based flametraps
- failure modes and inherent risks and hazards for each type of exhaust flametrap
- operational and installation requirements for heat exchangers when installed in conjunction with positive flametraps
- maintenance processes and procedures required to ensure ongoing safe operation
- importance of the application of appropriate components and fasteners, including the selection of appropriate bolts, studs, threads and washers to specific applications within a

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diesel engine system including the provisions of AS/NZS3584.3 relating to fasteners

- the types of joints that may be integral to the design and maintenance of a diesel engine system, including;
- fixed connection
- open joints
- the factors that determine the selection of joint types
- the requirements for interposed gaskets and seals in joints, including;
- materials
- dimensions
- form and shape
- items required to be used in performance of inspection, testing and maintenance tasks
- tools required for the performance of inspection, testing and maintenance tasks
- provisions of AS/NZS3584.1, 2 and 3 relating to fasteners and joints
- recognise the requirements and performance of various types of fasteners, including bolts, studs, threads and washers
- site inspection, testing and maintenance support requirements and availability
- site work area inspection requirements
- site work area safeguarding options and requirements
- site isolation and lock-out requirements and procedures
- site hazard and emergency procedures
- site inspection, testing and maintenance reporting requirements and procedures
- site inspection, testing and maintenance record procedures
- site requirements and procedures for working in isolation
- site requirements for the use of personal protective equipment

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Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the inspection, testing and maintenance of exhaust systems on diesel engine systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the inspection, testing and maintenance of exhaust systems on diesel engine systems • working with others to undertake and complete the inspection, testing and maintenance of exhaust systems on diesel engine systems that meets all of the required outcomes • consistent timely completion of the inspection, testing and maintenance of exhaust systems on diesel engine systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate: • working with others to undertake and complete the inspection, testing and maintenance of exhaust systems on diesel engine systems
Guidance information for assessment	• Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Compliance and other documentation may include:	• certification documentation • approval documentation • legislative, organisation and site requirements and procedures • manufacturer's specifications and guidelines • Australian Standards, including: AS/NZS3584 and AS 4291 • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Inspection may include:	• checking the marking of parts/components • determine that there is no evidence of carbon build-up on or heating of joints that may suggest a leakage of exhaust gas • check that the positive exhaust flametrap and exhaust gas cooling system is clean • check that the floats used for the low water shutdown in the exhaust system conditioner/flame trap/spark arrester are free, clean, unobstructed and correctly installed • check that the static water level on any water-based exhaust system conditioner/flame trap/spark arrester is at or above the level indicated • checking materials and gaskets/seals • the conformity of threads and fasteners to registration and/or certification drawings
Testing may include:	• conduct exhaust conditioner/ flametrap, low-water, shutdown tests (i.e. both low water test systems are tested separately) • check that the engine system shuts down at or higher than the minimum shutdown water level and record the water levels after shut-down. • conduct gas tightness tests for all joints within the exhaust system *Note:* A soapy water test may meet this requirement • measurement of joints for dimensional compliance, surface finish, flatness
Maintenance is:	• the combination of actions carried out to retain a diesel engine system in, or to restore it to, conditions in which it is able to meet the requirements of the relevant specification and perform its required function

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Maintenance may include authorised:	• service • adjusting • replacing • repair • overhaul • modification
Exhaust systems may include:	• exhaust manifolds • turbo-chargers or superchargers • pipe work • hoses • joints • fastenings • exhaust flametraps, which may include: • positive flametraps, (with temperature sensors) • water-based flametraps, (with water level sensors and test valves) • spark arrestor • exhaust cooling system, which may include: • water bath • air dilution • heat exchanger • water Injection • monitoring or shutdown devices • surface temperature control systems • catalytic converters, including DOCs and SCRs • fume diluters and forced-air systems • particulate filters • replacement element-type filters • exhaust gas recirculation
Diesel engine systems are:	diesel engines for underground coal mines and their: • inlet systems • exhaust systems • cooling systems • starting systems • shut-down and protection systems • electrical or electronic devices
Work requirements may come from briefings, handovers, and work orders and may include:	• nature and scope of tasks • procedures to be applied • quality standards to be applied • available resources • achievement targets

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	• operational conditions • site layout • out-of-bounds areas • designated safe areas • explosion-risk zones • hazardous areas • other hazards and potential hazards • obtaining permits required • worksite inspection requirements • lighting conditions • plant or equipment defects • coordination requirements or issues
Others may include:	• other maintenance personnel • support providers • contractors • underground production personnel • mobile or fixed plant operators
Inspect and prepare work area may include:	• determining if the proposed work area is a designated safe area • identification of explosion-risk zones • identification of hazardous areas • identification of hazards, including: • workshop work area hazard • underground work area hazards • work activity hazards • fire • explosion • emissions • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection
Items may include:	• authorised replacement parts • fasteners as specified in manufacturer’s drawings, which may include: • tensile strength • head and nut configuration • thread form and engagement • corrosion resistance (materials) • coatings (materials and application)

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	• tolerances for fits and threads • tolerances for mating surfaces • dimensions of clearance holes • fixing torques • lubricants and anti-seize compounds used • packing materials
Tools may include:	• hand tools • power tools • special tools • testing equipment
Support may include:	• other site personnel • contractors • cranes • other lifting equipment
Personal protection equipment may include:	• hard hats • eye protection • hearing protection • breathing apparatus • gas/fume masks • prescribed footwear
Pre-start procedures include:	• checking: • cleanliness, particularly coal dust • diesel and other flammable liquid leaks • coolant leaks in radiator or radiator hoses • coolant level • that guards are in place and secure • engine oil level is correct • conduct exhaust conditioner/flametrap, low-water, shutdown tests
Hazardous and emergency situations may include:	• working alone • personal injury • fire • explosions • emissions • electrical • noise • dust • noxious gases • environmental • chemical
Diagnose faults may include:	• root cause analysis

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	• troubleshooting techniques
Routine maintenance is to include:	• servicing, including: • cleaning, including the gas path of any exhaust system • conditioner • flametrap and/or • spark arrestor • checking and filling lubricants, fuel and water • adjusting • replacing
Overhaul may include:	• removal • dismantling • cleaning • inspecting • replacing, eg: • gaskets • fasteners • testing, including: • flatness • measuring dimensions • hydrostatic • reassembly • reinstallation, (e.g. cleaned or new exhaust positive flametrap assembly)
Records may include:	• inspection and test results • defect identified • defect rectification carried out • item consumed • hazard/risk management reports

Unit Sector(s)

Coal Mining (Diesel Engine Systems Maintenance)

Custom Content Section

Not applicable.

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RIIDES306 Inspect, test and maintain safety shutdown systems on diesel engine systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the inspection, testing and maintenance of safety shutdown systems of diesel engine systems for underground coal mines to provide a means of confirming their effectiveness.

Application of the Unit

This unit is appropriate for those undertaking the inspection, testing and maintenance of diesel engine systems for underground coal mines.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Metal, mechanical, electrical or automotive trades or mechanical or electrical engineering

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan for inspection, testing and/or maintenance tasks	1.1 Access, interpret and apply ***compliance and other documentation*** relevant for the ***inspection***, ***testing*** and ***maintenance*** of ***safety shutdown systems*** on ***diesel engine systems*** 1.2 Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of tasks 1.3 Resolve coordination requirements with ***others*** at the site prior to commencing and during work activities
2. Prepare for inspection, testing and/or maintenance tasks	2.1 ***Inspect and prepare work area*** in ***coordination with others*** 2.2 Identify and obtain ***items*** **and** ***tools*** required for the safe, effective and efficient conduct of the tasks. 2.3 Identify and arrange ***support*** required for completion of tasks 2.4 Select and use ***personal protection equipment*** appropriate to the task 2.5 Carry out required equipment ***pre-start and inspection procedures*** 2.6 Carry out required isolation and lock-out of all equipment necessary for the safe execution of tasks 2.7 Recognise and respond to ***hazardous and emergency situations***
3. Carry out inspection of safety shutdown systems	3.1 Carry out inspection of engine safety shutdown systems (fuel shutdown systems) 3.2 Carry out inspection of emergency safety shutdown systems 3.3 Carry out inspection of manual fuel shut-off valves 3.4 Carry out inspection of safety shutdown systems sensing devices 3.5 Carry out inspection of hoses, tubes cables and connectors associated with safety shutdown systems 3.6 ***Diagnose*** and record existing or identified faults

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4. Carry out testing of safety shutdown systems	4.1 Select and operate testing equipment and methods 4.2 Carry out testing and fault finding of engine safety shutdown systems (fuel shutdown systems) 4.3 Carry out testing and fault finding of emergency safety shutdown systems 4.4 Carry out testing and fault finding of manual fuel shut-off valves 4.5 Carry out testing and fault finding of safety shutdown systems sensing devices 4.6 ***Diagnose***, record and rectify existing identified faults
5. Carry out routine maintenance of safety shutdown systems	5.1 Select and use maintenance items, tools and equipment 5.2 Rectify diagnosed and identified faults 5.3 Carry out ***routine maintenance*** of engine safety shutdown systems (fuel shutdown systems) 5.4 Carry out routine maintenance of emergency safety shutdown systems 5.5 Carry out routine maintenance of manual fuel shut-off valves 5.6 Carry out routine maintenance of safety shutdown systems sensing devices
6. Carry out the overhaul of safety shutdown systems	6.1 Select and use overhaul items, tools and equipment 6.2 Carry out ***overhaul*** of safety shutdown systems in accordance with work requirements and Australian Standards
7. Complete post-work activity requirements	7.1 Tidy up the work area 7.2 Dispose of used oil, lubricant and other waste 7.3 Return and secure all tools and re-usable items 7.4 Report outcomes of inspection, testing, maintenance and overhaul tasks to appropriate person 7.5 Complete and maintain inspection, testing and maintenance ***records***

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to safely, effectively and efficiently inspect, test and maintain safety shutdown systems on diesel engine systems: • apply legislative, organisation and site requirements and procedures • apply surface and underground worksite hazard identification and risk management requirements and procedures • apply task hazard identification and risk management requirements and procedures • apply hazard and emergency procedures • apply site health and safety requirements and procedures • apply site environmental requirements and procedures • apply site quality requirements and procedures • read, explain and apply: • technical information including scheduled drawings • site/legislative requirements • records and reports • apply registration/certification information and implement conditions and recommendations • apply feedback procedures • apply technical and routine reporting requirements and procedures • apply investigation procedures • apply technical literacy, including reading and interpreting fluidic and logic schematic drawings • interpret and apply technical and scientific/industry terminology • analyse the function of the devices within an integrated system • operate manual fuel shutoff valve • apply site communication requirements and procedures • apply manufacturer’s requirements and procedures • communicate with those providing support • apply work area and equipment inspection procedures • apply work area safeguarding options and requirements • apply isolation and lock-out requirements and procedures • apply site service and maintenance reporting requirements and procedures • apply inspection requirements and procedures • apply testing requirements and procedures • apply fault finding techniques • apply maintenance requirements and procedures • work wearing appropriate personal protective equipment • use tools for inspection, testing and maintenance • use calibrated/verified instruments

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Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used.

This includes knowledge of the following, as required to safely, effectively and efficiently inspect, test and maintain safety shutdown systems on diesel engine systems:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- site and manufacturer's requirements and procedures
- legislative requirements and procedures
- site and legislative safety inspection requirements
- provisions of relevant Standards and guidelines
- potential hazards in the use of diesel engine systems in underground coal mines, including:
- explosions
- fire, and
- emissions
- limitations on allowable maintenance, including:
- service
- adjust
- replace
- repair
- overhaul
- work in hazardous environments
- limitations on allowable modifications and their required controls and procedures
- engine system shut-down devices required by AS/NZS3584.1&2
- water-bath level monitoring devices, including the methods employed to determine minimum safe shut-down levels and the testing methods and procedures required to confirm compliance
- functionality and performance of the various type of 'automatic safety shutdown systems, including;
- pneumatically operated
- engine oil (pressure) operated
- a mix of pneumatic and engine oil (pressure) operated
- electrically or electronically operated
- failure modes of safety shutdown systems, including
- contamination
- incorrect adjustment
- unauthorised adjustment
- testing procedures required to detect failures
- recommended maintenance procedures required to reduce the probability of failures
- features, function and performance of electrical / electronic safety shutdown system and sufficient knowledge of the Group I explosion protection techniques used for devices to identify a component failure by inspection (only) and to seek expert competent advice, such

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as;

- Ex.d – flameproof
- Ex.i a-b – intrinsic safety
- Ex.m a-b – dncapsulation
- Ex.e - increased safety
- Ex.o - oil immersion
- Ex.s - special protection
- requirements for cables and connections used for electrical / electronic safety shutdown system, including those nominated in AS/NZS4871.6
- features, function, performance of the various type of ‘emergency stop systems, including;
- strangler valves in the air intake system
- inert gas injection
- decompression
- operation of the manual fuel shut off valve
- items required to be used in performance of inspection, testing and maintenance tasks
- tools required for the performance of inspection, testing and maintenance tasks
- provisions of AS/NZS3584.1, 2 and 3 relating to fasteners and joints
- recognise the requirements and performance of various types of fasteners, including bolts, studs, threads and washers
- site inspection, testing and maintenance support requirements and availability
- site work area inspection requirements
- site work area safeguarding options and requirements
- site isolation and lock-out requirements and procedures
- site hazard and emergency procedures
- site inspection, testing and maintenance reporting requirements and procedures
- site inspection, testing and maintenance record procedures
- site requirements and procedures for working in isolation
- site requirements for the use of personal protective equipment

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Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the inspection, testing and maintenance of safety shutdown systems on diesel engine systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the inspection, testing and maintenance of safety shutdown systems on diesel engine systems • working with others to undertake and complete the inspection, testing and maintenance of safety shutdown systems on diesel engine systems that meets all of the required outcomes • consistent timely completion of the inspection, testing and maintenance of safety shutdown systems on diesel engine systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate: • working with others to undertake and complete the inspection, testing and maintenance of safety shutdown systems on diesel engine systems
Guidance information for assessment	• Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

Compliance and other documentation include:	• certification documentation • approval documentation • legislative, organisation and site requirements and procedures • manufacturer's specifications and guidelines • Australian Standards, including: AS/NZS3584 and AS 4291 • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Inspection may include:	• checking the marking of parts/components • inspecting the fuel shutdown linkages to ensure they are in good condition and fully operative

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Testing may include:	• conducting exhaust conditioner/flametrap, low-water, shutdown tests (both low water test systems are tested separately) • checking that all gauges and indicators are operating correctly and are clearly visible • checking the proper operation and function of; • low oil engine pressure detection sensor • coolant loss protection sensor • coolant over temperature protection sensor • confirming that the manual fuel valve operates correctly to stop the diesel within the time determined by the original type testing including a reasonable margin • test that the air receiver safety (pressure relief) valves are in place, not blocked/seized and operating correctly • checking the engine system shuts down at, or higher than, the minimum shutdown water level, (record the water levels after shut-down) • testing the emergency safety shutdown system to ensure that the engine stops under the operation of the emergency safety shutdown system working in isolation of other engine safety shutdown systems, record the time taken for the engine to stop with the engine running at high idle, (Note: The diesel engine system manufacturer may provide test instructions to minimise the risk of engine damage during testing (see AS/NZS 3584.2) • checking the proper operation and function of the low oil engine pressure detection sensor, and recording the engine oil pressure at the time of shutdown • checking the proper operation and function of the coolant loss detection sensor, and recording the time taken to cause the engine to shut down • checking the proper operation and function of the coolant over-temperature sensor, and recoring the coolant temperature at which the engine shut down, (Note: Testing this sensor by defeating other sensors and overheating the diesel engine system may be hazardous or cause damage to the diesel engine system. It is recommended that the sensor be removed from the engine and tested in heated water while remaining connected to the engine shutdown system) • checking the proper operation and function of the exhaust gas over-temperature sensor, and recording

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	the exhaust temperature at which the engine shut down • confirming that all of the engine shutdown system fault indicators properly indicate each of the faults simulated in the foregoing tests
Maintenance is:	• the combination of actions carried out to retain a diesel engine system in, or to restore it to, conditions in which it is able to meet the requirements of the relevant specification and perform its required function
Maintenance may include authorised:	• service • adjusting • replacing • repair • overhaul • modification
Safety shutdown systems may include**:**	• engine safety shutdown system (fuel shutdown system), including: • manual actuation system • fault indication system • emergency safety shutdown system, may be: • a strangler valve • inert gas injection • decompression • manually actuated • automatically operated • manual fuel shut-off valve • sensing devices, including: • engine cooling system • engine oil pressure • water-based flametraps • exhaust cooling • particulate filter
Diesel engine systems are:	diesel engines for underground coal mines and their: • inlet systems • exhaust systems • cooling systems • starting systems • shut-down and protection systems • electrical or electronic devices
Work requirements may come from briefings, handovers, and work orders	• nature and scope of tasks • procedures to be applied

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and may include:	• quality standards to be applied • available resources • achievement targets • operational conditions • site layout • out-of-bounds areas • designated safe areas • explosion-risk zones • hazardous areas • other hazards and potential hazards • obtaining permits required • worksite inspection requirements • lighting conditions • plant or equipment defects • coordination requirements or issues
Inspect and prepare work area may include:	• determining if the proposed work area is a designated safe area • identification of explosion-risk zones • identification of hazardous areas • identification of hazards, including: • workshop work area hazard • underground work area hazards, and • work activity hazards • fire • explosion • emissions • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection
Others may include:	• other maintenance personnel • support providers • contractors • underground production personnel • mobile or fixed plant operators
Items may include:	• authorised replacement parts • fasteners as specified in manufacturer’s drawings • packing materials
Tools may include:	• hand tools • power tools

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	• special tools
Support may include:	• other site personnel • contractors • cranes • other lifting equipment
Personal protection equipment may include**:**	• hard hats • eye protection • hearing protection • breathing apparatus • gas/fume masks • prescribed footwear
Pre-start and inspection procedures include:	• checking: • cleanliness, particularly coal dust • diesel and other flammable liquid leaks • coolant leaks in radiator or radiator hoses • coolant level • guards are in place and secure • engine oil level is correct • conduct exhaust conditioner/flametrap, low-water, shutdown tests
Hazardous and emergency situations may include:	• working alone • personal injury • fire • explosions • emissions • electrical • noise • dust • noxious gases • environmental • chemical
Diagnose faults may include:	• root cause analysis • troubleshooting techniques
Routine maintenance is to include:	• servicing, including cleaning • adjusting • replacing
Overhaul may include:	• removal • dismantling • cleaning • inspecting • replacing, eg:

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	• valves sensors exhaust gas recirculation • particulate filters • replacement element-type filter testing, including: • individual devices system operation and function reassembly • reinstallation
Records may include:	• inspection and test results • defect identified • defect rectification carried out • item consumed • hazard/risk management reports

Unit Sector(s)

Coal Mining (Diesel Engine Systems Maintenance)

Custom Content Section

Not applicable.

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RIIDES307 Test, determine the cause and rectify excessive emission levels on diesel engine systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the testing, determining the cause of and rectifying excess emission levels of diesel engine systems for underground coal mines. It includes: planning and preparing for and carry out emission testing; determination of the cause of excessive emission levels and carrying out maintenance to rectify the situation; and the completion of post work activity requirements

Application of the Unit

This unit is appropriate for those undertaking the inspection, testing and maintenance of diesel engine systems for underground coal mines

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Metal, mechanical, electrical or automotive trades or mechanical or electrical engineering

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Plan for testing and/or rectification tasks	1.1 Access, interpret and apply ***compliance and other documentation*** relevant to the ***testing***, ***determining the cause*** of and ***rectification*** of excessive ***emission*** levels on ***diesel engine systems*** 1.2 Obtain, interpret and clarify ***work requirements*** for the completion of tasks 1.3 Resolve coordination requirements with ***others*** at the site prior to commencing and during work activities
2. Prepare for testing and/or rectification tasks	2.1 ***Inspect and prepare work area*** in ***coordination with others*** 2.2 Identify and obtain ***items*** and ***tools*** required for the safe, effective and efficient conduct of the tasks. 2.3 Identify and arrange ***support*** required for the safe, effective and efficient completion of the tasks 2.4 Select and use ***personal protection equipment*** appropriate to the task 2.5 Carry out required equipment ***pre-start and inspection procedures*** 2.6 Carry out isolation and lock-out of all equipment necessary for the safe execution of tasks 2.7 Recognise and respond to ***hazardous and emergency situations***
3. Carry out testing of emission levels and determine the cause of excessive emission levels	3.1 Select and operate testing equipment and methods 3.2 Carry out testing on diesel engine systems 3.3 Test and report on the performance of diesel oxidation catalyst system 3.4 Determine the cause of any excessive emission levels 3.5 Report outcomes of testing to appropriate person
4. Rectify excessive emission levels	4.1 Select and use maintenance items, tools and equipment 4.2 Carry out ***maintenance*** to rectify excessive emission levels on

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	diesel engine systems
5. Complete post-work activity requirements	5.1 Tidy up the work area 5.2 Dispose of used oil, lubricant and other waste 5.3 Return and secure all tools and re-usable items 5.4 Complete and maintain inspection, testing and maintenance ***records***

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to test, diagnose the cause of and rectify excessive emission levels on diesel engine systems used: • apply legislative, organisation and site requirements and procedures • apply site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures • apply site and manufacturer's requirements and procedures • apply surface and underground worksite hazard identification and risk management requirements and procedures • apply task hazard identification and risk management requirements and procedures • apply technical literacy • interpret and apply technical and scientific/industry terminology • communicate with those providing support • apply work area and equipment inspection procedures • apply work area safeguarding options and requirements • apply isolation and lock-out requirements and procedures • apply hazard and emergency procedures • apply site service and maintenance reporting requirements and procedures • work wearing appropriate personal protective equipment • use tools required for the performance of inspection, testing and maintenance tasks • use calibrated or verified instruments for testing
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to test, diagnose the cause of and rectify excessive emission levels on diesel engines: • site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures • limitations on allowable maintenance including work in hazardous environments • limitations on allowable modifications and the required controls and procedures • site and manufacturer's requirements and procedures • health effects of diesel exhaust emissions including; • gaseous emissions • diesel particulate matter: • allowable limits (base line limits, raw exhaust and general body) • emission test procedures (AS/NZS3584 & MDG 29)

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- raw exhaust test procedure
- general body test procedure
- ventilation requirements for emission dilution
- mine management system to control emissions
- defects and failure modes that may cause non-compliant emissions (including increased backpressure)
- principles employed to limit the creation of and to manage harmful emissions from diesel engines that may include;
- engine settings and adjustments
- engine system maintenance
- electronic controls (ECM) and injection systems
- the emissions effects of increased air induction systems, including: super-charging and turbo-charging
- exhaust gas re-circulation (EGR)
- diesel oxidisation catalyst (DOC)
- selective catalytic reducer (SCR)
- particulate (smoke) filter (DPM)
- use of water-based conditioners
- the effect of distillate (diesel fuel) types on emissions
- tools required for the performance of inspection, testing and maintenance tasks
- provisions of AS/NZS3584.1, 2 and 3 relating to fasteners and joints
- recognise the requirements and performance of various types of fasteners, including bolts, studs, threads and washers
- site inspection, testing and maintenance support requirements and availability
- site work area inspection requirements
- site work area safeguarding options and requirements
- site isolation and lock-out requirements and procedures
- site hazard and emergency procedures
- site inspection, testing and maintenance reporting requirements and procedures
- site inspection, testing and maintenance record procedures
- site requirements and procedures for working in isolation
- site requirements for the use of personal protective equipment

Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and

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	instructions for the testing, determination of the cause of and rectification of excessive emission levels on diesel engine systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the testing, determination of the cause of and rectification of excessive emission levels on diesel engines systems • working with others to undertake and complete the testing, determination of the cause of and rectification of excessive emission levels on diesel engines systems that meets all of the required outcomes • consistent timely completion of the testing, determination of the cause of and rectification of excessive emission levels on diesel engine systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

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Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate: • working with others to undertake and complete the testing, determination of the cause of and rectification of excessive emission levels on diesel engine systems
Guidance information for assessment	• Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Compliance and other documentation to include:	• certification documentation • registration documentation • legislative, organisation and site requirements and procedures • manufacturer's specifications and guidelines • Australian Standards and Guidelines, including: AS/NZS3584 and MDG 29 • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Testing may include:	• testing the composition of exhaust emissions within the exhaust stream under load conditions • testing the diesel engine system for; • NO_x (oxides of nitrogen), • CO (carbon monoxide), • CO_2 (carbon dioxide) • diesel particulate matter
Determining the cause may include:	• root cause analysis • troubleshooting techniques
Rectification is:	• the combination of actions carried out to restore a diesel engine system to, a condition in which it is able to meet the requirements of the relevant specification and perform its required function
Emissions may include:	• NO_x (oxides of nitrogen) • CO (carbon monoxide) • CO_2 (carbon dioxide) • diesel particulate matter **Excessive emissions may be contributed to by:** • inlet or exhaust restriction • engine wear • component failure • contaminated or non-compliant fuel • incorrect fuel/air ratio • lubrication oil in the combustion chamber • the product of abnormal combustion (unintended fuels being breathed by an engine)
Diesel engine systems are:	diesel engines for underground coal mines and their:

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	• inlet systems • exhaust systems • cooling systems • starting systems • shut-down and protection systems • electrical or electronic devices
Work requirements may come from briefings, handovers, and work orders and may include:	• service and maintenance schedules • production requirements • nature and scope of tasks • achievement targets • operational conditions • operational requirements • site layout and out of bounds areas • worksite inspection requirements • plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Others may include:	• yard persons • processing plant operators • mobile plant operators • other maintenance personnel
Inspect and prepare work area may include:	• determining if the proposed work area is a designated safe area • identification of hazards, including: • workshop work area hazard • underground work area hazards • work activity hazards • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection
Items may include:	• replacement parts • fasteners • packing materials
Tools may include:	• hand tools • power tools • special tools • testing equipment
Support may include:	• other site personnel

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	• contractors • cranes • other lifting equipment
Personal protection equipment may include:	• hard hats • eye protection • hearing protection • breathing apparatus • gas/fume masks • prescribed footwear
Pre-start and inspection procedures include:	• checking: • cleanliness, particularly coal dust • diesel and other flammable liquid leaks • coolant leaks in radiator or radiator hoses • coolant level • guards are in place and secure • engine oil level is correct
Hazardous and emergency situations may include:	• working alone • personal injury • fire • explosions • emissions • electrical • noise • dust • noxious gases • environmental • chemical
Maintenance is to include:	• service • adjust • replace
Maintenance may include:	• repair • overhaul • modify
Records may include:	• inspection and test results • defect identified • defect rectification carried out • item consumed • hazard/risk management reports

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Unit Sector(s)

Coal Mining (Diesel Engine Systems Maintenance)

Custom Content Section

Not applicable.

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RIIDML401A Apply the principles of demolitions

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of demolition tasks in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of demolition tasks are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, in demolitions within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking the ***demolition tasks*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the demolition tasks, to meet the specific task requirements 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** demolition tasks performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise demolitions:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpret demolitions materials properties and test results
- provide recommendations for the improvement of the safe, effective and efficient execution of demolition tasks

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Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise demolitions:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational Health and Safety requirements and procedures
- excavation shoring requirements and procedures
- slope management requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- demolitions plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of demolition tasks
- demolitions task resource requirements and procedures
- Activities scheduling requirements and procedures
- demolitions materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- demolitions monitoring methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- demolition and related activities' terminology
- works planning techniques
- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of demolitions • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of demolitions • working with others to plan, prepare and conduct demolition tasks • provision of clear and timely instruction and supervision of demolition tasks • evidence of the consistent successful supervision of demolitions
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct demolitions
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of demolitions

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications
	• task drawings
	• sources of materials
	• other organisations and contractors involved in the task or related tasks
	• coordination, timing and budgeting requirements

Demolitions may include:	• buildings • civil works

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Demolition tasks may include:	• site preparation methods • site set out methods • scaffolding erection methods • excavation shoring methods • bulk demolitions methods • detailed demolitions methods • haulage vehicle access methods • demolition materials conveyancing methods • structure propping methods • sediment control methods
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational Health and Safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • material supply vehicles • construction materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the

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	task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication

Unit Sector(s)

Demolitions

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIEGS201A Operate in isolated and remote situations

Modification History

Not applicable.

Unit Descriptor

This unit covers operation in isolated and remote situations in the metalliferous mining industry. It includes planning and preparing for operating in remote environments, preparing for emergency situations, and operating in remote environments. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for operating in remote environments	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Collate and record information relating to operating in the ***remote environment*** 1.3. Establish detailed operating and travel plans, including a disaster plan and fallback position, in consultation with supervising staff 1.4. Notify ***appropriate authorities*** of the action plans and time schedules according to enterprise policy 1.5. Identify and source relevant maps
2. Prepare for operating in remote environments	2.1. Prepare ***personal needs*** for activities or travel in remote areas 2.2. Prepare transportation and equipment for use in prescribed work location or along prescribed routes 2.3. Obtain and study relevant maps prior to departure 2.4. Report and record planned activities and itinerary accurately prior to departure
3. Prepare for emergency situations	3.1. Check provisioning meets expected operational and possible ***emergency needs*** 3.2. Check that initial ***planning*** and regular monitoring ensures ***structured use of available provisions*** and resources 3.3. Structure operating plan to include ***training in remote area survival techniques*** prior to operating in remote situations 3.4. Include emergency management procedures as an integral part of operating plans and enterprise policy
4. Operate in remote environments	4.1. Complete activities according to instructions and established time schedules 4.2. Carry out all activities in remote situations in accordance with prescribed procedures 4.3. Handle ***emergency situations*** in accordance with prescribed procedures and enterprise policy 4.4. Follow established reporting procedures on

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	completion of planned activities and on return to base

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate in isolated and remote situations:

- apply legislative, organisation and site requirements and procedures for operation in isolated and remote situations
- plan for operating in remote environments
- prepare for operating in remote environments
- prepare for emergency situations
- operate in remote environments

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate in isolated and remote situations:

- map reading and navigation skills including direction finding (e.g., GPS, use of compass, stars or watch)
- local topography, nearby inhabitants and locations within that area
- survival techniques and human needs relating to survival situations
- clothing requirements for sun or heat protection
- basic First Aid
- bush craft including making a fire, cooking and wild food gathering
- water supplies, sources and generation methods
- emergency vehicle and mechanical equipment repair
- the operation of communication equipment (e.g., field communications by two-way, satellite telephony and HF radio), and distress signalling including use of signalling mirrors
- weather and weather indicators
- basic rope skills including useful knots (reef, clove hitch, truckie's hitch, bowline); simple lashings and tying down loads

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operation in isolated and remote situations • implementation of requirements, procedures and techniques for the safe, effective and efficient operation in isolated and remote situations • working with others to operate in isolated and remote situations that meets all of the required outcomes • consistent timely completion of operation in isolated and remote situations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation in isolated and remote situations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevantcompliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • guidelines and reporting procedures for personnel operating in remote environments • personal diary records as well as property records
Remote environment may include:	• any workplace where the ability to get help because of distance is such that personal safety may be at risk
Appropriate authorities may include:	• the property manager, other staff or recognised regulatory authorities (e.g., Police, Maritime Safety Authority, State Emergency Service, and Civil Aviation Authority)
Personal needs may include:	• water generating and shade generating gear • non-perishable survival rations • clothing to provide for the worst case scenario
Emergency needs may include:	• First Aid supplies • spare parts • telephones • two way radios • repair tools for the selected form of transportation • retrieval, communications, prescribed emergency equipment for water travel • emergency beacons and other position location devices • emergency planning including establishment of contingency plans ("fall back position")
Planning may include:	• establishment of time schedules and intended outcomes in consultation with managers and

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	supervising staff • provisioning for extreme circumstances, including worst case scenario • identification of alternative routes, available water supplies and travel conditions such as checks of actual and forecast weather conditions • consideration of any unplanned deviation from the planned route, itinerary or timing including the work processes involved • establishment of rescue plans and the consideration of what circumstances might require such an operation to be mounted
Structured usage of provisions may include:	• available provisions and resources used at a rate that sustains the individual or party and will last if possible until the end of any possible delays or emergency situations
Training in remote area survival techniques may include:	• managing emergencies • location and/or distilling of water • provision and erection of shelter • conservation of energy • the identification and use of wild food (bush tucker) • GPS position locating • setting out beacons and distress signalling • staying put or remaining with transport • communicating with rescue teams
Emergency situations may include:	• vehicle or equipment breakdown • lack of food, water or protective clothing • flood, fire or storm
Types of working situations may include:	• working alone or in teams
Operational strategies may include:	• planned provision of water and other survival clothing and requisites sufficient to meet the needs of all personnel
Personnel briefings may include:	• provision of advice on intended routes, work locations, maps and direction finding equipment
Communication may include:	• 2-way radio, satellite radio/phone, marine radio or mobile telephone
Distress signalling may include:	• EPIRBs, signalling mirrors, fire or signals scratched on the ground

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Licensing may include:	• operating vehicles on roads, heritage reserves or public reserves, radio communications equipment

Unit Sector(s)

Exploration and Field Work

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIEGS202B Conduct field work

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of field work in the metalliferous mining industry. It includes carrying out survey and pilot results; designing, plotting and laying out grids; reading and using maps; and locating tenement marks. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Carry out survey and plot results	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Carry out surveys using relevant ***survey equipment*** 1.3. Conduct ***reconnaissance*** survey of the field 1.4. Locate ***reference pegs*** where available
2. Design, plot and lay out a grid	2.1. Design a grid from ***supplied information*** 2.2. ***Plot grid*** to scale 2.3. Mark baseline and grid datum mark-up pegs with eastings and northings 2.4. Lay out grid using ***plotting*** techniques
3. Read and use maps	3.1. Identify the sources of ***maps*** 3.2. Identify the types and features of ***maps*** used for mineral exploration fieldwork 3.3. Maintain map storage system 3.4. Calculate scales and distances between points 3.5. Calculate bearings relative to true, magnetic, grid and local north
4. Locate mining tenement marks	4.1. Refer to state and federal agencies for information relevant to mining tenements to determine the types of mining tenements and their purpose 4.2. Draw scale maps of mining tenement to statutory regulations 4.3. Obtain and complete forms required to obtain mining tenements to statutory requirements for lodging, and lodge with relevant agencies/authorities 4.4. Mark out, or locate and maintain mining tenement marks to statutory requirements, using ***Global Positioning System*** (***GPS***)

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct field work:

- apply legislative, organisation and site requirements and procedures
- draft and sketch/use surveying instruments
- solve problems
- use PC software for data collection and analysis
- use field testing and measurement instruments/equipment

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct field work:

- field surveying methods
- types and features of maps
- use and reading of maps
- calculation of scales, distances and bearings
- laying out of grids
- plotting techniques
- mining tenement legislation and requirements
- marking out of mining tenements
- Global Positioning Systems (GPS)
- types of GPS and DGPS/operation of GPS and functions
- satellite coverage
- waypoint generation
- datum conversion
- AMG and latitude/longitude
- track logging

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of field work • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the conduct of field work • working with others to undertake and complete the conduct of field work that meets all of the required outcomes • consistent timely completion of the conduct of field work that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of field work

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Surveying equipment may include:	• tape • compass • optical square • staff and bubbles • theodolite • GPS
Reconnaissance survey may include:	• checking access • collecting soil and rock samples • grid-layout • magnetic bearings • geo-physical • Global Positioning System (GPS) • travel times • type of terrain • vegetation types
Field information may be obtained from:	• air photos • topographical maps • satellite imagery
Field site grid may cover:	• rock outcrops • streams and rivers • road cuttings • potential ore deposits
Reference pegs may be put in place by relevant Lands Departments and can be used to tie the local grid to the National Grid,	

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to sea level datum and to obtain coordinates for GPS system	
Supplied information may include:	• stike of rocks • line spacing • sample spacing • environmental issues • budget constraints
Plotting a grid may include:	• plotting to scale drawn to local grid North • calculating and drawing true North • calculating and drawing magnetic North • calculating and drawing grid North • assigning eastings and northings
Maps may include:	• topographical • geological • cadastral • mining tenement • orthophotomaps • geomagnetic maps • mineral field and district boundary maps
Global Positioning System (**GPS**) **may** be described as: 'a system which is able to show a person's exact position on Earth at anytime, anywhere, and in any weather. It is operated by GPS satellites orbiting the Earth; being monitored continuously at ground stations located around the world. The satellites transmit signals that can be detected by anyone with a GPS receiver' (The Aerospace Corporation, 2003)	

Unit Sector(s)

Exploration and Field Work

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIEGS301A Operate and maintain instruments and field equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation and maintenance of instruments and field equipment in the metalliferous mining industry. It includes planning and preparing for the use of instruments and field equipment, testing instruments and field equipment, calibrating instruments and field equipment, operating instruments and field equipment, mainlining instruments and field equipment, identifying faults in instruments and field equipment, and commissioning new instruments and equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for use of ***instrumentsand fieldequipment***	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of auxiliary equipment for work activities 1.6. Perform equipment pre-start checks to ensure ***equipment*** is ready for operation 1.7. Identify, address and report ***potential risks and hazards*** 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel and plant
2. Test ***instrument/field equipment***	2.1. Perform safety checks 2.2. Identify potential faults and/or malfunctions of ***instruments/field equipment*** 2.3. Label and report damaged or unsafe ***instruments/field equipment*** and remove from service 2.4. Ensure operational log books are up dated
3. Calibrate ***instruments/field equipment***	3.1. Closely follow calibration schedules 3.2. Label out calibration ***instruments/equipment*** and advise other operatives promptly 3.3. Identify cause/s of incorrect calibration 3.4. Perform new base calibration 3.5. Recommission instrument/equipment 3.6. Prepare compliance and calibration report as required
4. Operate instruments/field equipment	4.1. Optimise instrument/equipment settings for the particular measurement or analysis 4.2. Perform measurements with the optimum precision given field and technical

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	constraints 4.3. Use time and materials efficiently and perform measurements in priority order 4.4. Assess data against quality control information, known standards and references for accuracy and precision 4.5. Repeat measurements where non-standard results are obtained
5. Maintain instruments/field equipment	5.1. Perform preventative ***maintenance*** 5.2. Identify and report equipment wear and faults 5.3. Perform minor repairs within limits of authorisation 5.4. Replace defective parts and makes adjustments 5.5. Seek expert help where difficulties are encountered 5.6. Update ***maintenance*** and calibration records
6. Identify faults in instruments/field equipment	6.1. Identify and clarify the nature of the fault 6.2. Determine and rank likely causes of fault 6.3. Apply simple checks and tests 6.4. Obtain suitable tools and equipment to test faults 6.5. Apply fault finding methodology
7. Commission new instruments and equipment	7.1. Arrange commissioning procedures with manufacturer's agent as required 7.2. Unpack, check and assemble ***instruments***/***equipment*** according to manufacturer's warranty requirements 7.3. Calibrate instrument/equipment to meet manufacturer's specifications 7.4. Check instrument/equipment performance against specifications prior to acceptance of item 7.5. Prepare and make operating instructions available

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate and maintain instruments and field equipment:

- apply legislative, organisation and site requirements and procedures for operating and maintaining instruments and field equipment
- use hand and power tools
- use calibration equipment
- use test equipment
- employ fault finding procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate and maintain instruments and field equipment:

- manufacturer's operating requirements for instruments and equipment
- manufacturer's calibration procedures
- company and site policy and procedures regarding instrument and equipment use
- instrument and equipment test methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating and maintaining instruments and field equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of instrument and field equipment operation and maintenance • working with others to undertake and complete the operation and maintenance of instruments and field equipment that meets all of the required outcomes • consistent timely completion of instrument and field equipments operation and maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation and maintenance of instruments and field equipments

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • instrument/equipment manual • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Instruments and field equipment may include:	• motors • generators • two way radios • mobile communications equipment • theodolite • satellite navigation system • memory magnetometer • gravity meter • IP transmitter and receiver • tem transmitter and receiver • gamma spectrometer • seismograph • well logger • data logger • portable PC
Operating conditions may include:	• day and night • laboratory • field environment • dry and wet • stable ground • broken ground • various natural landscapes • working over old underground workings and voids
Potential risks and hazards may	• abandoned equipment

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include:	• adverse weather conditions (electrical storms, floods, fires, extreme heat) • chemicals • contaminants (dust, noise, etc) • equipment • fences • materials • personnel • pot holes • unsafe ground • vehicles • old workings
Maintenance of instruments/equipment may include:	• replacing 'remove and replace' components • lubrication • working adjustments to tolerances • cleaning and storing • completing usage records
Legislation may include Acts and Regulation dealing with:	• mining safety and health • mine inspection • OHS • explosives
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality

Unit Sector(s)

Exploration and Field Work

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIEGS302A Plan and undertake field trip

Modification History

Not applicable.

Unit Descriptor

This unit covers the planning and undertaking of field trips in the metalliferous mining industry. It includes organising field trips, establishing and maintaining field camps, working as part of a team in remote locations, and applying remote safety and survival skills. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise field trips	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Arrange access to field site with relevant stakeholders 1.3. Adhere to restrictions, agreements and customs when accessing field site 1.4. Identify available and efficient ***communication systems*** 1.5. Use maps, photos, satellite images and existing exploration data to plan access, traverses and camp site(s) 1.6. Plan ***supplies*** to support the location, duration and size of the field trip 1.7. Obtain ***supplies*** according to inventory and securely stow for field trip 1.8. Establish duty rosters for field trip activities in consultation with other team members
2. Establish and maintain field camp	2.1. Set up appropriate size field camp for number of team members in accordance with safety and environmental procedures 2.2. Monitor and participate in catering, hygiene and security activities as allocated 2.3. Obtain and monitor use of ***supplies*** as necessary to maintain health and safety 2.4. Set up and operate gas and electrical appliances and generators safely
3. Work as part of a team in remote locations	3.1. Contribute effectively to the achievement of shared goals and objectives 3.2. Cooperate with co-workers in a manner that promotes a safe working environment and creates good working relationships 3.3. Communicate clearly with co-workers and supervisors 3.4. Work effectively and harmoniously with other team members to achieve team objectives 3.5. Maintain acceptable level of personal hygiene
4. Apply remote safety and	4.1. Follow safety procedures whenever

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survival skills	helicopters are in the vicinity 4.2. ***Communicate*** effectively using standard protocols 4.3. Adopt conventional signalling codes and symbols in emergency situations 4.4. Recognise and manage the priorities for survival

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to plan and undertake field trips:

- apply legislative, organisation and site requirements and procedures for planning and undertaking field trips
- erect shelters
- collect food and water
- light fires
- navigate with maps and stars
- use vehicle for survival
- plan and schedule
- apply interpersonal communication skills
- apply basic vehicle maintenance techniques
- use portable gas and electricity equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to plan and undertake field trips:

- land-use permits
- relevant regulations, licences and permits
- communications systems
- historical mining data of field site
- trip planning and logistics
- supply sources, costs and availability
- remote hazards, risks and survival techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for planning and undertaking field trips • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of field trip planning and undertaking • working with others to undertake and complete the planning and undertaking field trips that meets all of the required outcomes • consistent timely completion of field trip planning and undertaking that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the planning and undertaking of field trips

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Communications systems may include:	• satellite phone • mobile network phone • Royal Flying Doctor Service • 2-way radio • land line • CB radio
Field trip **supplies** may include:	• food • water • hygiene facilities • fuel • transport • communications • vehicle and equipment spares • First Aid and health
Regulations may include:	• Australian standards • environmental agencies regulations • Environmental Protection Act • isolation procedures • manufacturer's specifications and recommendations • Mine Regulations Act (Duty of Care) • OHS Legislation • site regulation and procedures
Access issues may include:	• Aboriginal sites • privately owned land • defined heritage areas

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	• inhospitable terrain and climate

Unit Sector(s)

Exploration and Field Work

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIEGS303A Provide geological field assistance

Modification History

Not applicable.

Unit Descriptor

This unit covers the provision of geological field assistance in the metalliferous mining industry. It includes planning and preparing for geological field assistance, collecting and classifying common rocks, ores and minerals, and using geological maps and sections. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for geological field assistance	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work according to compliance documentation and ***operating conditions*** 1.3. Receive, interpret and clarify roster changeover details 1.4. Arrange ***communications*** method and protocols with field team members 1.5. Select personal protective equipment appropriate for work activities 1.6. Select and obtain relevant ***geological instruments and field equipment*** for work activities 1.7. Perform ***geological instrument and field equipment*** checks to ensure instruments and equipment are ready for operation 1.8. Identify, address and report ***potential risks and hazards*** 1.9. Identify, address and report ***environmental issues*** 1.10. Adhere to emergency procedures to ensure safety of personnel and equipment
2. Collect and classify common rocks, ores and minerals	2.1. Take ***rock***, ***ore and mineral samples*** according to site procedures and geologists requirements 2.2. ***Communicate*** field activities and results to relevant personnel 2.3. Examine specimens or outcrops to identify the properties and ***classify*** specimens into geological types 2.4. Compile ***records*** of all sampling results

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3. Use geological maps and sections	3.1. Interpret correct ***symbols*** to read geological maps and sections 3.2. Interpret and record geological problems using block diagrams 3.3. Interpret and record geographical features from landforms and maps 3.4. Identify, in weathered outcrop, simple features as signs of the fresh rock type 3.5. Carry out basic geological surveying techniques

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to provide geological field assistance:

- apply legislative, organisation and site requirements and procedures for the provision of geological field assistance
- drive all-terrain vehicles
- access, interpret and apply technical and safety information
- communicate and coordinate activities with others
- keep plant and equipment records
- apply diagnostic/faultfinding techniques
- comply with environmental requirements
- work in a team environment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to provide geological field assistance:

- methods of sampling and sample identification
- geology of rock, ore and mineral deposits
- classification of rock, ore and minerals
- geometry of geological structures on maps and in the field
- company and site policy and procedures regarding geological field work
- types and functions of geological instruments and field equipment
- safe and correct use of instruments and equipment in the field
- sampling procedures and requirements
- communications methods and protocols
- recording and reporting systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for providing geological field assistance • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of providing geological field assistance • working with others to undertake and complete the provision of geological field assistance that meets all of the required outcomes • consistent timely completion of providing geological field assistance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the provision of geological field assistance

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • operating conditions • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Operating conditions may include:	• day and night • laboratory • field environment • dry and wet • stable ground • broken ground • various landscapes • working over old under-ground workings and voids
Communications may include:	• verbal (face-to-face or radio) • e-mail • facsimile • memorandum • shift hand over documents
Geological instruments and field equipment may include:	• hand lens • compass • two way radios • theodolite • clinometer • tape measure • portable PC • protractor • scale rule • balance • stereo microscope

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Potential risks and hazards may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground/unstable faces • vehicles
Environmental issues may include:	• culturally-sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality • erosion • rehabilitation
Rock, **ore and minerals** may include:	• volcanogenic massive sulphide • ultramafic volcanogenic nickel • differentiated mafic complex nickel • hydrothermal gold vein • volcanogenic pipe diamond • alluvial gold • alluvial heavy mineral sands • pegmatitic tin • tantalum • bauxite • aluminium • slate • phyllite • schist

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	• gneiss • quartzite • marble • hornfels • amphibolite
Classification parameters may include:	• felsic category • intermediate category • mafic category • ultramafic category • minerals present • grain size
Records may include:	• field note book entries • filling in forms/templates and logs • memorandums • facsimiles/photographs • sketches • map sections • formal reports • audio recorded messages
Sample types may include:	• rock or mineral hand specimen • drill core/drill chips/drill sludge • oriented sample
Symbols may include:	• contacts • faults • dip and strike • scale bars • north points • legends • geological age

Unit Sector(s)

Exploration and Field Work

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIEGS304A Mobilise equipment and materials

Modification History

Not applicable.

Unit Descriptor

This unit covers the mobilisation of materials and equipment in the metalliferous mining industry. It includes preparing for mobilisation to site, carrying out pre-start and routine checks, proceeding to the exploration site, and carrying out basic operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for mobilisation to site	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Observe safety ***rules and regulations*** including site rules safety plans and site specific instructions 1.3. Check operational safety by carrying out pre-start inspection procedures according to manufacturer's specifications, company and/or site requirements 1.4. Receive, interpret and clarify briefing details in accordance with requirements 1.5. Prepare ***vehicle***, vehicle kit, camping equipment, First Aid kit, survival kit and personal equipment for remote assignment
2. Carry out pre-start and routine checks	2.1. Carry out pre-start, daily engine, fuel and fluid level checks according to manufacturer/supplier instructions 2.2. Observe safety procedures while checking hydraulic systems, high-pressure air, electrical circuits and batteries
3. Proceed to exploration site	3.1. Drive vehicle in accordance with policies and procedures and State regulation 3.2. Apply safe driving techniques to all vehicles 3.3. Position/arrange ***loads*** so they will be carried in a safe manner to prevent loss/damage to vehicle or cargo 3.4. Use a ***range of load restraints***/***lashings*** to secure various loads to a vehicle. 3.5. Identify and assess ground conditions before driving vehicle across country 3.6. Drive vehicle ***off road*** in a range of ***terrains*** 3.7. Demonstrate stall recovery 3.8. Use ***maps***, ***communication and navigation aids***/***equipment*** 3.9. Identify and avoid potential/actual hazards on the route 3.10. Carry out emergency procedures in accordance with manufacturer's and/or

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	company requirements 3.11. Recognise and demonstrate ***basic survival techniques*** for a range of situations 3.12. ***Communicate information*** to base or other vehicles 3.13. Complete move to site and all required documentation
4. Carry out basic operator maintenance	4.1. Identify hazards, and methods of minimising hazards, in conducting maintenance, particularly in the field 4.2. Carry out minor repairs/replacements as required in accordance with manufacturer's specifications 4.3. Overcome minor breakdowns/bogging using ***recovery techniques*** 4.4. Carry out vehicle washing and housekeeping regularly according to site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to mobilise equipment and materials:

- apply legislative, organisation and site requirements and procedures for the mobilisation of equipment and materials
- apply communication and recording skills
- perform manual and mechanical handling
- drive laden vehicles (on and off road)
- perform basic maintenance skills
- apply knots, load securing devices and attachment points for loaded vehicles
- apply recovery techniques for bogged plant/vehicles
- acquire required licences and permits
- apply diagnostic and troubleshooting procedures
- use hand tools
- solve problems

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to mobilise equipment and materials:

- provisions of the Workplace Health and Safety Acts, their regulations and code of practice
- particular state or territory regulations relating to operations
- reasons loads shift and methods of preventing shifting
- number and types of lashings to apply, fixing points and basic knots
- safe carrying of loads
- a range of acquired safety and survival skills
- driving with the minimum of damage to vehicles, equipment and structures
- relevant OHS requirements for transport and storage of materials and equipment
- operational and maintenance procedures
- a basic knowledge of hydraulic systems, components and cleanliness requirements
- a basic knowledge of internal combustion motors and the major components
- a basic knowledge of electricity and in particular, the associated hazards
- use, transport and storage of LPG and LPG appliances
- recording and reporting

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for mobilising equipment and materials • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of equipment and materials mobilisation • working with others to undertake and complete the mobilisation of materials and equipment that meets all of the required outcomes • consistent timely completion of equipment and materials mobilisation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the mobilisation of equipment and materials

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Rules and regulations may be found in:	• industrial safety regulations and legislation/organisation policy/procedures covering same • driving manuals • safety code of practice, signs and hazard codes • materials safety data sheets (MSDS), container labels • manufacturer's specifications • employer's procedure manual/work instruction/safety analysis/directive • company instructions • maps and plans • vehicle log books • accident investigation forms
• **Vehicles** may include:	• any two-wheel drive passenger vehicle • all-wheel drive sedan/utility/station wagon • light trucks (usually table tops) • heavy support vehicles • heavy vehicles (such as drill rigs) • towed vehicle/trailer **Note**: State legislative requirements on road transport are adhered to
• **Loads** may include:	• materials for exploration operations • spares for all equipment

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	• fuels for all equipment, including oils and other lubricants • other hazardous substances and equipment • water tanks • ancillary equipment (e.g. pumps, generators, lighting plant) • compressors, caravans and/or vehicles • pallets • fluids • bulk materials • decontamination (cleaning) chemicals • safety equipment including personal protective equipment • towed loads **Note**: Some of the materials to be transported are inherently hazardous
Terrain over which vehicles can be driven may include:	• state and federal roads, sealed and unsealed • tracks or trails (e.g. mining and forestry access roads, fire trails) • off-road, where surface may vary in type, condition, gradient • barriers such as streams, gullies, sand dunes, banks
Hazards (other than those relating to terrain) may include:	• power lines • fences, gates • natural disasters (e.g. floods) • LPG appliances/canisters • other transported gas cylinders • portable and fixed winches • road transport hazards (e.g. braking with loads, camber, hills, rough surfaces) • serviceability of slings, tow ropes, shackles, snatch blocks lashings, vehicle restraining structures, decks, steps and jacks
Range of load restraint/lashings may include:	• direct lashings • indirect lashings • combination of direct and indirect lashings • knots (securing loads on vehicles)
Driving a vehicle **off-road** may include:	• driving on rocky trails • steep gradients • driving in mud, snow and ice

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	• crossing sand dunes/crossing rivers • stall recovery - ascent and descent
Maps, **communications and navigation aids** may include:	• compass • global positioning system (GPS) • range of maps and diagrams • topographical information
Basic survival techniques may include:	• coping with breakdowns in the bush or isolated areas • physical and emotional requirements in an emergency and in isolated areas • methods of self protection to enhance survival • sources of water • making fire/protecting the environment • signalling search parties/aircraft • search party assistance • determining directions/locations • remaining in control/assisting other team members • coping with accidents and illness/First Aid within limits of competency • reading and interpreting maps
Information communicated may include:	• use of two way radio, CB radio • SAT phones, mobile phones • reporting defects, necessary detours, work hazards, changes in environmental patterns (e.g. storm, flood) • phonetic alphabet • call signs and radio protocols
Documentation may include:	• log books/service records • pre-drive checks
Minor repairs/replacements may include:	• wheel changing/rotation • using jumper leads • charging/servicing batteries • bleeding brakes • bleeding hydraulic system • adjusting clutch • bleeding fuel system • servicing air cleaners • changing oil and oil filters • greasing/lubrication • basic pre-drive operational checks of a vehicle

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Recovery techniques may include:	• jacking • winching • rigging • towing

Unit Sector(s)

Exploration and Field Work

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIEGS305B Navigate in remote or trackless areas

Modification History

Not applicable.

Unit Descriptor

This unit covers navigation in remote or trackless areas in the metalliferous mining industry. It includes using maps, using a compass, planning a route for remote or trackless areas, and navigating in remote or trackless areas. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous Mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Use maps	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Select the type of map(s) suitable for the activity 1.3. Identify possible sources of error and inaccuracies on the ***map*** 1.4. Identify ***symbols and information*** contained on the ***map*** that may be used in navigation 1.5. Identify the way in which relevant ***symbols and information*** on the ***map*** can be used in navigation
2. Use a compass	2.1. Identify the essential features of a compass 2.2. Demonstrate the manner in which a compass is used to maintain a designated course 2.3. Demonstrate how compass use reflects understanding of the factors that affect accuracy
3. Plan a route for remote or trackless areas	3.1. Apply ***symbols and information*** contained on the *map* to plan an efficient route/course suitable to navigation and activity-specific abilities 3.2. Obtain additional information to assist in the preparation of a ***navigation data sheet*** from the map and from other suitable ***sources of information*** 3.3. Identify ***potential hazards*** associated with navigating through adverse environmental conditions 3.4. Consider ***other contextual issues*** in the planning of a route 3.5. Prepare a ***navigation data sheet***/route card 3.6. Identify emergency or contingency escape routes 3.7. Consider environmental impact issues in the planning of a route
4. Navigate in remote or trackless areas	4.1. Maintain orientation of ***map*** to surroundings 4.2. Identify possible sources of navigation

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	error in specific locations 4.3. Use combined ***map***, compass and other techniques whilst following a route in ***unmodified landscapes*** 4.4. Employ techniques for ***distance estimations*** of travel in the absence of identifying features 4.5. Maintain the designated course whilst bypassing ***obstacles*** 4.6. Maintain a course in adverse environmental conditions and/or poor visibility 4.7. Fix position accurately and regularly using a combination of appropriate ***navigation techniques*** 4.8. Select an efficient route choice for the surroundings and conditions 4.9. Employ suitable combinations of ***navigation techniques*** to fix position and identify unknown features when lost

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to navigate in remote or trackless areas:

- apply legislative, organisation and site requirements and procedures for navigation in remote or trackless areas
- solve problems
- maintain a compass bearing in poor visibility and/or extreme conditions
- observe surroundings
- make decisions
- apply communication skills
- acquire required licences and permits
- apply diagnostic and troubleshooting procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to navigate in remote or trackless areas:

- factors affecting navigation techniques in extreme environmental conditions
- map types and sources of error
- use of a compass and factors that affect their accuracy
- navigation techniques and aids
- navigation data sheets
- route planning and issues that should be considered in extreme environmental conditions
- estimation of travelling times in unmodified landscape and/or difficult terrain/conditions
- techniques for estimating distance travelled in poor visibility
- back-bearings and resections
- techniques to navigate around obstacles

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for navigating in remote or trackless areas • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of remote or trackless area navigation • working with others to undertake and complete the navigation of remote or trackless areas that meets all of the required outcomes • consistent timely completion of remote or trackless area navigation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the navigation of remote or trackless areas

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Maps may include**:**	• topographic • aerial photographs • digital maps
Symbols and information may include:	• grid lines and numbers • contour lines • magnetic variation • scale • map legend • topographic features
Navigation data sheet information may include:	• grid reference points • grid and magnetic bearings • distances • estimated travelling times • height gain/loss • gradient • identifiable features • escape routes
Sources of information may include:	• guide books • local inhabitants • peers/local clubs • digital resources
Potential hazards may include:	• river crossings and rising water levels • open water crossings • cliff lines • wet and slippery rocks • extreme heat • extreme cold • fog and mist • snow • severe storms/squalls • strong winds • heavy rain • man-made features

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Other contextual issues may include:	• navigation and activity-specific abilities • available clothing, equipment and resources • fitness levels • type of terrain or features of the location/access and escape routes • number of people travelling • natural protection or shelter
Unmodified landscapes align to Class 6 Tracks within the Australian standard for Walking Tracks AS 2156.1. Standards Australia 2001, and may include those where:	• there are no modifications to the natural surface or the natural environment so that track alignment is indistinct • there is no clearance along the track • signage is generally not provided • there may include steep sections of unmodified surfaces and other terrain and man-made hazards • the track is not managed for public risk • there is an appreciable risk of onset of poor visibility
Obstacles may include:	• thick vegetation • drops and climbs • marshes and bogs • fog • rivers, lakes and dams
Distance estimations may include:	• pacing • time
Navigation techniques may include:	• use of compass • linear features/point features • attack points • aiming off • collecting features • spiral search • sweep search • back-bearings and resections • use of Global Positioning Systems (GPS) • use of stars and sun • use of natural features

Unit Sector(s)

Exploration and Field Work

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIEGS306A Prepare drill site

Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation of a drill site in the metalliferous mining industry. It includes planning for drill site preparation, creating access to the drill site, preparing the drill site, minimising impact of contaminated groundwater, and managing rare flora. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for drill site preparation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access the drill site layout plan to confirm the location, size and configuration of the proposed drill site 1.3. Identify, address and report ***potential hazards*** and risks 1.4. Select and wear appropriate ***personal protective equipment*** 1.5. Establish communication system and protocols 1.6. Carry out ***plant and equipment*** pre-start checks
2. Create access to drill site	2.1. Identify existing tracks and use for entry to drill site 2.2. If necessary, create ***new tracks*** which minimises water flows and erosion by following the ***natural contours*** of the land 2.3. Create new tracks to drill site which minimise the clearing of vegetation by avoiding large trees and preserving root stocks 2.4. Raise blades to a minimum of 150mm when using machinery to prepare access blade 2.5. Cut or ***trim larger trees*** if unavoidable 2.6. Stockpile or windrow cleared vegetation for use during site rehabilitation
3. Prepare drill site	3.1. Clear drill site removing minimum vegetation 3.2. Seek permission from appropriate person to move hole location if vegetation significantly impedes access to the proposed drill site 3.3. Manually clear ***ground cover*** to prevent fire hazards to drill rig 3.4. Leave mature trees undisturbed 3.5. Build sumps and bunds on the downside of the hole collar location
4. Minimise impact of	4.1. Identify the possible presence of

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contaminated groundwater	groundwater which may be a threat to vegetation during drilling operations 4.2. If groundwater is discovered, construct appropriate number of ***sumps*** to recommended configuration and distances from the drill rig location 4.3. Store topsoil removed from sump construction separately to facilitate more effective rehabilitation
5. Manage rare flora	5.1. Determine the presence and type of rare flora before clearing vegetation, 5.2. Seek advice on the ***action to be taken*** where rare flora are identified

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to prepare a drill site:

- apply legislative, organisation and site requirements and procedures for preparation of a drill site
- apply communication and recording skills
- perform manual and mechanical handling
- perform basic maintenance skills
- acquire required licences and permits
- apply diagnostic and troubleshooting procedures
- use hand tools
- solve problems

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to prepare a drill site:

- provisions of the Workplace Health and Safety Acts, their regulations and code of practice
- particular state or territory regulations relating to vegetation clearing
- drill site layout plans
- environmental work procedures
- hazards associated with drill site preparation work
- types and operational characteristics of plant/equipment used in creating access tracks and for drill site preparation operations
- basic maintenance
- fire control methods
- environmental principles and practices
- types and identification of rare flora
- type and identification of contaminated groundwater
- re-vegetation methods
- recording and reporting

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for preparation of a drill site • implementation of requirements, procedures and techniques for the safe, effective and efficient preparation of a drill site • working with others to undertake and complete the preparation of a drill site that meets all of the required outcomes • consistent timely preparation of a drill site that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the preparation of a drill site

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Potential hazards may include:	• disturbance or interruption of services • solar radiation • dust • noise • air- and soil-borne micro-organisms • chemicals and hazardous substances • sharp hand tools and equipment • manual handling • moving machinery and machinery parts • slippery and uneven surfaces • dehydration • stings • contaminated groundwater
Personal Protective Equipment may include:	• hat • boots • overalls • gloves • goggles • respirator or face mask • face guard • hearing protection • drinking water • sunscreen lotion • hard hat
Plant and equipment may include:	• hydraulic excavators • wheel loaders

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	• crawler dozers • crawler loaders • motor graders and scrapers • backhoes • chainsaw
New tracks should be cleared to a width no wider than three metres	
Natural contours should be followed; straight line clearing of tracks and gridlines is not to occur	
Trim larger trees should be carried out with a chainsaw rather than bulldozing	
Ground cover may include:	• grass • spinifex • undergrowth
Sumps should:	• be located away from any significant vegetation to minimise distur4bance to roots and to prevent horizontal transmission of saline water and potentially hostile material coming into contact with vegetation • have one side that is ramped at approximately 45o to allow animals that may fall into the sump to escape

Action to be taken may include:	• if a single or small number of plants are found:
	  • note location
	• if work activity is planned for the area, relocate work activity
	  • report to regulator
	• if a large community of plants is located:
	  • note location
	• if work activity is planned for the area, contact regulator and determine course of action
	• if sustained communities of plants are located:
	  • note location
	• if work activity is planned for the area, contact regulator and obtain concurrence to continue work program

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Unit Sector(s)

Exploration and Field Work

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIENV201A Identify and assess environmental and heritage concerns

Modification History

Not applicable.

Unit Descriptor

This unit covers identifying and assessing environmental and heritage concerns in resources and infrastructure industries. It includes identifying site specific environmental and heritage concerns; assessing and responding to environmental and heritage concerns; working within environmental and heritage guidelines.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify site specific environmental and heritage concerns	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***environmental and heritage issues*** 1.2. Identify and report environmental and heritage issues to ***relevant authority*** according to site procedures, regulations and other compliance requirements 1.3. Accurately identify the nature of environment and/or heritage concerns from site information 1.4. Enact emergency plan 1.5. Enact relevant isolation procedures according to relevant requirements 1.6. Remove and/or contain ***contaminants*** upon identification
2. Assess and respond to environmental and heritage concerns	2.1. Inspect site on receipt of relevant clearances to confirm environment and/or heritage issues 2.2. Complete all required records and documentation accurately and promptly
3. Work within environmental and heritage guidelines	3.1. Adhere to environment and heritage issues 3.2. Conform to environmental and heritage guidelines in the organisation of work activities 3.3. Contact and inform appropriate authorities of environmental and/or heritage issues

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to identify and assess environmental and heritage concerns:

- apply legislative, organisation and site requirements and procedures for identifying and assessing environmental and heritage concerns
- apply diagnostic techniques
- make decisions
- apply procedures for operating, maintaining and cleaning equipment
- identify hazards
- apply hazardous goods handling techniques
- interpret plans, reports, maps, specifications
- apply records maintenances requirements and procedures
- organise work tasks
- apply safe work practices
- work in a team
- use communications equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to identify and assess environmental and heritage concerns:

- contamination principles
- emergency procedures
- environmental and heritage procedures
- equipment safety requirements
- fire management strategies
- future land use principles
- hazardous goods procedures and consequences of spills
- isolation procedures
- mine operational system
- night and day working procedures
- OHS procedures
- open cut procedures
- operational procedures and checks
- site procedures

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- site safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for identifying and assessing environmental and heritage concerns • implementation of requirements, procedures and techniques for the safe, effective and efficient identification and assessment of environmental and heritage concerns • working with others to undertake and complete the identification and assessment of environmental and heritage concerns that meet all of the required outcomes • consistent timely completion of the identification and assessment of environmental and heritage concerns that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the identification and assessment of environmental and heritage concerns

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant Compliance documentation may include:	• Australian standards • environmental agencies regulations • Environmental Protection Act • isolation procedures • manufacturer's specifications and recommendations • mine safety and health legislation and regulations • OHS legislation • site regulations, requirements and procedures
Environmental and heritage issues may include:	• ancient fossils • culturally-sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • historical site (homestead) • noise • possible Indigenous site • runoff • spills • water quality
Relevant authorities may include:	• environmental authorities • experts (scientific, historic, biological) • local Aboriginal leaders
Contaminants may include:	• diseased vegetation • leakage into ground water • oil spill • saline water

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Unit Sector(s)

Environment

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIENV202A Suppress airborne contaminants

Modification History

Not applicable.

Unit Descriptor

This unit covers suppressing airborne contaminants in metalliferous mining operations. It includes: planning and preparing for operations; eliminating, suppressing, minimising airborne contaminants; and carrying out operator maintenance.

Application of the Unit

This unit applies in all contexts to the elimination, suppression or minimisation of airborne contaminants in an underground, open-cut or processing environment and is appropriate for those working in a operational roles, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***airborne contaminant*** suppression 1.2. Obtain, interpret and clarify/confirm the requirement for airborne contaminant suppression through shift briefings, handover details or site procedures before proceeding 1.3. Select appropriate ***airborne contaminant suppression method*** that best meets the requirements according to site conditions and ***legislative requirements*** 1.4. Identify, address and report environmental issues 1.5. Identify any areas that require communicating with other personnel using approved communication methods 1.6. Identify any emergency procedures to ensure safety of personnel, plant and equipment
2. Eliminate, suppress, minimise airborne contaminants	2.1. Select appropriate procedure and/or equipment to eliminate, suppress or minimise airborne contaminants 2.2. Operate appropriate airborne contaminant suppression equipment or monitor appropriate method according to site conditions and operating procedures 2.3. Adjust airborne contaminant suppression activities according to schedule, weather or site conditions 2.4. Act, or report on monitoring systems and alarms in accordance with manufacturer instructions and/or site procedures 2.5. Recognise and respond to hazardous and emergency situations in accordance to manufacturer instructions and/or site procedures 2.6. Maintain records in accordance with site requirements
3. Carry out operator maintenance	3.1. Carry out inspections and fault-finding according to manufacturer's instructions

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	and/or site procedures 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks to manufacturer's instructions and/or site procedures 3.3. Carry out minor maintenance to manufacturer instructions and/or site procedures 3.4. Provide operator support to maintenance personnel in preparing for or during minor and major maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to suppress airborne contaminants:

- apply legislative, organisation and site requirements and procedures
- make decisions
- apply directing and signalling procedures
- apply equipment cleaning requirements and procedures
- apply equipment maintenance requirements and procedures
- apply equipment operating techniques
- follow instructions
- apply hazard identification procedures
- interpret plans, reports, maps, specifications
- apply record maintenance procedures
- follow safe work practices
- apply fault-finding procedures
- wear protective equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to suppress airborne contaminants:

- emergency procedures
- environmental aspects
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data (rock formation)
- maintenance procedures
- mine operation system
- OHS procedures
- plant terminology
- site procedures (operational and maintenance)
- site safety requirements
- suppression methods relevant to the workplace

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for suppressing airborne contaminants • implementation of requirements, procedures and techniques for the safe, effective and efficient suppression of airborne contaminants • working with others to suppress airborne contaminants that meets all of the required outcomes • consistent timely suppression of airborne contaminants that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the suppression of airborne contaminants

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Airborne contaminants may include:	• dust • chemical particulates • gas e.g. blast gases, vehicle/equipment fumes etc
Airborne contaminant suppression methods may include:	• chemical • equipment operating techniques • manual spray units on conveyors, reclaimers, stackers, ship loaders, stockpiles etc • sprinklers/water cannons • belt washers • water trucks/road sweepers • exhaust fans • ventilation
Legislative requirements may include Acts and regulation dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment • vehicle emissions • confined space

Unit Sector(s)

Environment

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIENV301A Conduct atmospheric monitoring

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of environmental monitoring in underground coal mines. It includes: preparing and planning for monitoring; carrying out surveys and sampling; conducting primary analysis and responding to results; and maintaining equipment.

Application of the Unit

This unit covers ventilation surveys, dust, water and noise sampling and atmospheric analysis and is appropriate for those working in a operational roles, in underground operations, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare and plan for monitoring	1.1. Access, interpret and apply ***compliance documentation*** relevant to conduct environmental monitoring in underground coal mines 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Access, interpret and apply ***mine environmental data*** required to complete the allocated work. 1.4. Identify and obtain equipment and resources required for the work requirements. 1.5. Access and apply safety information and procedures throughout the work
2. Carry out surveys and sampling	2.1. Establish a safe work environment and monitor throughout the job 2.2. Coordinate activities with others at the site prior to commencement of, and during, the work activity 2.3. Inspect and test ***sampling*** equipment to ensure functionality, safety and compliance with manufacturer instructions and/or site requirements 2.4. Conduct ***surveys*** and sampling in accordance with site, and legislative requirements 2.5. Recognise and respond to hazardous and emergency situations in accordance with manufacturer instructions and/or site procedures
3. Conduct primary analysis and respond to results	3.1. Record and compare the results of sampling and surveys in accordance with site requirements 3.2. Initiate or refer /report action to rectify anomalies to the appropriate authority for further action
4. Maintain equipment	4.1. Carry out monitoring equipment inspections and fault finding in accordance with manufacturer instructions and/or site requirements 4.2. Process records in accordance with site

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	requirements

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct environmental monitoring:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- read mine plan
- apply sampling tools and equipment operating procedures
- read, interpret and report / record results
- apply instrument calibration and testing
- apply environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct environmental monitoring:

- site operational safety procedures
- site and legislative requirements
- survey and sampling methods
- characteristics of samples taken
- tools and sampling equipment and use
- mine plan
- geological and survey data
- monitoring equipment maintenance systems and procedures
- site environmental requirements and constraints related to monitoring

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting of environmental monitoring • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of environmental monitoring • working with others to undertake and complete environmental monitoring that meets all of the required outcomes • consistent timely completion of environmental monitoring that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete environmental monitoring

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details, and/or • work orders
Mine environmental data may be in the form of:	• ventilation/gas data • deputy reports • survey data
Sampling may be conducted by:	• fixed monitoring • volumetric monitoring • personnel monitoring • hand held instruments
Surveys may be conducted:	• daily • weekly • monthly • as required
Surveys may include:	• ventilation surveys • stone dust samples • goaf samples • noise readings • atmospheric analysis • respirable dust samples • water samples • diesel particulates

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Unit Sector(s)

Environment

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIENV302A Apply environmentally sustainable work practices

Modification History

Not applicable.

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to effectively implement environmentally sustainable work practices.
This unit requires the ability to access industry information, and applicable legislative and occupational health and safety (OHS) guidelines.
While no licensing, legislative, regulatory or certification requirements apply holistically to this unit at the time of publication, relevant national, state and territory legislation, regulations and codes of practice impact upon this unit.

Application of the Unit

This unit applies to operators/team members required to follow workplace procedures and instructions, and to work in an environmentally sustainable manner.
This unit is appropriate for those working in operational roles at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify current practices in relation to resource usage	1.1. Access, interpret and apply ***compliance documentation*** relevant to implementing and monitoring environmentally sustainable work practices 1.2. Identify environmental regulations applying to the enterprise 1.3. Identify procedures for assessing ***compliance*** with environmental/sustainability regulations
2. Review and communicate identified improvements	2.1. Review current work processes to access information and data to assist in identifying areas for improvement 2.2. Collect and organise information from a range of ***sources*** to provide information/advice and tools/resources for improvement opportunities 2.3. Seek input from ***stakeholders***, ***key personnel and specialists*** 2.4. Communicate proposed improvements according to site procedures
3. Apply performance improvement strategies	3.1. Source and use appropriate ***techniques and tools*** to assist in achieving efficiency targets 3.2. Apply continuous improvement strategies to own work area of responsibility through ***environmental and resource efficiency improvement plans*** 3.3. Apply ***suggestions*** and ideas about environmental and resource efficiency management from stakeholders where appropriate
4. Monitor performance	4.1. Use evaluation and monitoring tools and technology 4.2. Report on progress against efficiency targets to key personnel and stakeholders 4.3. Promote organisational improvement strategies

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply environmentally sustainable work practices:

- comply with all relevant legislation associated with job specifications and procedures
- apply communication and problem solving skills to question, seek clarification and make suggestions relating to work requirements and efficiency
- apply communication/consultation skills to support information flows
- apply communication and teamwork skills to recognise procedures; to follow instructions; to respond to change, such as current workplace environmental/sustainability frameworks; and to support team work and participation in a sustainable organisation
- apply literacy, numeracy and technology skills to interpret workplace information in relation to work role, and to document and measure resource use
- apply technology skills to select and use technology appropriate for a task

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required apply environmentally sustainable work practices:

- change management/continuous improvement processes
- best practice approaches relevant to own area of responsibility and industry
- compliance requirements within work area for all relevant environmental/sustainability legislation, regulations and codes of practice including resource hazards/risks associated with work area, job specifications and procedures
- environmental and energy efficiency issues, systems and procedures specific to industry practice
- OHS issues and requirements
- organisational structure and reporting channels and procedures
- quality assurance systems relevant to own work area
- sustainability in the workplace
- terms and conditions of employment including policies and procedures, such as daily tasks, work area responsibilities, employee, supervisor and employer rights, equal opportunity.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • accessing, interpreting and complying with a range of environment/sustainability legislation and procedural requirements relevant to daily responsibilities • knowledge of relevant compliance requirements within work area • accurately following organisational information to participate in and support an improved resource efficiency process and reporting as required • planning and organising activities in relation to measuring current use and devising strategies to improve usage • developing and/or using tools such as inspection checklists, to collect and measure relevant information on organisation resource consumption, within work role • identifying organisational improvements by applying efficient resource use to daily activities • knowledge of environmental and resource hazards/risks
Context of and specific resources for assessment	This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency.
	The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's ability to participate in environmentally sustainable work practices

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • Australian standards • environmental agencies regulations • Environmental Protection Act • isolation procedures • manufacturer's specifications and recommendations • OHS legislation and regulations • site regulations, requirements and procedures • code of practice

Compliance may include:	• meeting relevant laws, by-laws and regulations, or best practice or codes of practice, to support compliance in environmental performance and sustainability at each level as required (such as Environmental Protection or Biodiversity Conservation Act):
	  • international
	  • commonwealth
	  • state/territory
	  • industry
	  • organisation

Sources may include:	• organisation specifications • regulatory sources • relevant stakeholders • resource use

Stakeholders, **key personnel and specialists** may include:	• individuals and groups both inside and outside the organisation who have direct or indirect interest in the organisation's conduct, actions, products and services, including:
	  • customers
	  • employees at all levels of the organisation
	  • government
	  • investors

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	• local community • other organisations • suppliers • key personnel within the organisation, and specialists outside the organisation who may have particular technical expertise
Techniques and tools may include:	• examination of invoices from suppliers • examination of relevant information and data • measurements made under different conditions • others as appropriate to the specific industry context

Environmental and resource efficiency improvement plans may include:	• addressing environmental and resource sustainability initiatives such as environmental management systems, action plans, green office programs, surveys and audits
	• applying the waste management hierarchy in the workplace
	• determining the organisation's most appropriate waste treatment including waste to landfill, recycling, re use, recoverable resources and wastewater treatment
	• initiating and/or maintaining appropriate organisational procedures for operational energy consumption, including stationary energy and non stationary (transport)
	• preventing and minimising risks, and maximising opportunities such as:
	  • improving resource/energy efficiency
	  • reducing emissions of greenhouse gases
	• reducing use of non renewable resources
	• referencing standards, guidelines and approaches such as:
	  • ecological footprinting
	  • Energy Efficiency Opportunities Bill 2005
	  • Global Reporting Initiative
	  • green office program - a cultural change program
	  • green purchasing
	  • Greenhouse Challenge Plus (Australian government initiative)
	  • ISO 14001:1996 Environmental management systems life cycle analyses
	  • product stewardship

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	• supply chain management • sustainability covenants/compacts • triple bottom line reporting

Suggestions may include ideas that help to:	• prevent and minimise risks and maximise opportunities such as:
	  • usage of solar or renewable energies where appropriate
	  • reducing emissions of greenhouse gases
	  • reducing use of non renewable resources
	  • making more efficient use of resources, energy and water
	• maximising opportunities to re use, recycle and reclaim materials
	• identifying strategies to offset or mitigate environmental impacts:
	  • purchasing carbon credits
	  • energy conservation
	  • reducing chemical use
	  • reducing material consumption
	• expressing purchasing power through the selection of suppliers with improved environmental performance e.g. purchasing renewable energy
	• eliminating the use of hazardous and toxic materials

Unit Sector(s)

Environment

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIENV401A Supervise dust and noise control

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of dust and noise control in the mining and extractive industries. It includes: accessing and sharing requirements and procedures; planning and implementing site requirements; and monitoring, adjusting and reporting performance.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Access and share requirements and procedures	1.1. Access, interpret and share ***compliance documentation*** relevant to controlling dust and noise on the site 1.2. Provide information in a language, style and format that is understood by colleagues 1.3. Make clear the health and environmental implication of non-conformance to all within the workplace
2. Plan and implement site requirement	2.1. Plan ***control measures*** and ***work practices*** with colleagues to ensure compliance 2.2. Implement control measures and work practices to ensure compliance with requirements and procedures 2.3. Plan and implement ***dust and noise monitoring*** 2.4. Identify training needs and implement training, coaching and mentoring support to colleagues in applying the work and requirements for dust and noise control
3. Monitor, adjust and report	3.1. Identify, rectify and report actual and potential dust and noise problems promptly and decisively to ensure workplace compliance 3.2. Manage activities so that potential non-compliance with dust and noise control requirements are minimised 3.3. Submit recommendations on improvements in dust and noise control to designated persons/groups 3.4. Inform individuals/teams of the results of improvements in dust and noise control in the workplace 3.5. Maintain systems, records and reporting procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise dust and noise control:

- apply legislative, organisation and site requirements and procedures
- provide information
- apply techniques to identify potential dust and noise problems
- apply work procedure and instruction preparation requirements and procedures
- apply procedures for developing and introducing practices to improve the work environment
- use effective consultative mechanisms to negotiate processes and procedures appropriate to statutory/legal requirements
- explain complex information to superiors/subordinates
- apply coaching and mentoring support techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise dust and noise control:

- legislative, requirements and procedures
- organisation's requirements and procedures
- manufacturer's requirements and procedures
- identification of harmful dust and noise levels that effect human health
- health and environmental implication of non-conformance
- potential dust and noise problems
- dust and noise control measures
- dust and noise monitoring requirements and procedures
- work practices that minimise the potential and impact of dust and noise problems
- procedures for identifying training needs and implement training
- recording and reporting procedures
- human resource management
- providing information
- work procedure/instruction writing

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervising dust and noise control • implementation of appropriate procedures and techniques for the safe, effective and efficient dust and noise control • working with others to plan, prepare and conduct dust and noise control • provision of clear and timely instruction and supervision by the individual of those involved in dust and noise control • evidence of the consistent successful dust and noise control
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct dust and noise control
	  • provision of clear and timely instruction and supervision by the individual of those involved in carrying out dust and noise control

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Control measures may include:	• dust extraction and collection • noise insulation • enclosures • installing and maintaining seals • water sprays • water carts • application of chemical dust suppression • stockpile design • bund walls/wind breaks • routine maintenance • personal protective equipment • maintenance and replacement of non-compliant equipment
Work practices may be included in	• site work instructions or standard operating procedures

Dust and noise monitoring may include:	• health monitoring, such as:
	  • noise exposure
	  • respirable dust
	  • irrespirable dust
	• health screening, such as:
	  • pre-employment
	  • in employment
	  • on exit of employment
	• environmental monitoring, such as:

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	• deposition rates • noise levels • wind speed and direction • types of dust

Unit Sector(s)

Environment

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIENV402A Implement and monitor environmental policies

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation and monitoring of environmental policies in the resources and infrastructure industries. It includes providing information to the work team, managing on-site safety, implementing and monitoring operational procedures, implementing and monitoring change and continuous improvement, implementing and monitoring recording procedures, and implementing and monitoring an environmental and energy efficiency management training program.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Provide information to the work team	1.1. Access, interpret and apply ***compliance documentation*** relevant to the implementation and monitoring of environmental policies 1.2. Explain ***environmental and energy efficiency information*** provided to the ***work team*** in a clear and concise manner and ensure it is made readily accessible to all employees 1.3. Convey organisation's ***activities***/***performance*** in regard to environmental and energy efficiency management and ***business sustainability*** 1.4. Explain links between environmental, energy consumption, financial, safety and other risk areas and how these are integrated in organisational policies and practices 1.5. Provide information on environmental and energy efficiency systems and procedures and other risk areas within the area of management responsibility
2. Implement and monitor operational procedures	2.1. Identify and assess existing and potential ***environmental and energy efficiency risks*** and/or seek required expert advice 2.2. Carry out prioritised recommendations from the assessments as part of the organisation's operational procedures 2.3. Implement organisational ***environmental and energy efficiency policies and procedures***, including risk policies and procedures 2.4. Allocate tasks and monitor outcomes, in accordance with organisational policies and targets 2.5. Implement contingency plan promptly when incidents occur
3. Implement and monitor change and continuous improvement	3.1. Implement ***environmental and energy efficiency improvement plans*** for own work group and integrate with other operational activities

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	3.2. Identify, implement and monitor best practice approaches to improving environmental and energy efficiency performance by reducing environmental and greenhouse risk and waste 3.3. Seek suggestions and ideas about environmental energy efficiency management from the work team and act upon where appropriate 3.4. Seek suggestions from ***supply chain*** at tender/contract stage for ways of improving environmental and energy consumption performance
4. Implement and monitor recording procedures	4.1. Identify and implement internal and external reporting procedures 4.2. Maintain ***environmental and energy efficiency records*** accurately and legibly and store securely in a form accessible for reporting purposes 4.3. Monitor information/records to identify trends that may require remedial action and use to promote continuous improvement of environmental and energy consumption performance
5. Implement and monitor an environmental and energy efficiency management training program	5.1. Identify ***environmental and energy efficiency training*** needs accurately, and specify knowledge gaps in environmental and energy efficiency corporate practices 5.2. Make arrangements for fulfilling identified training needs for the work group with relevant parties

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to implement and monitor environmental policies:

- apply communication/consultation skills to ensure information is supplied to the work team
- apply literacy skills for comprehending documentation and interpreting environmental and energy efficiency requirements
- apply technology skills, including the ability to operate and shut-down equipment
- ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to implement and monitor environmental policies:

- legislation from all levels of government that affects business operation, especially in regard to occupational health and safety, environmental and energy efficiency issues, equal opportunity, industrial relations and anti-discrimination
- environmental and energy efficiency issues, especially in regard to recycling and wastewater treatment, catchments, air, noise, ecosystems, habitat, and waste minimisation relevant to own work area
- environmental and energy efficiency management systems, policies and procedures relevant to own work area
- best practice approaches relevant to own work area
- quality assurance systems relevant to own work area
- supply chain procedures
- strategies to maximise opportunities and minimise impacts relevant to own work area

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for implementing and monitoring environmental policies • implementation of requirements, procedures and techniques for the safe, effective and efficient implementation and monitoring of environmental policies • working with others to plan, prepare, implement and monitor environmental policies • evidence of the consistent successful implementation and monitoring of environmental policies
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to implement and monitor environmental policies
	  • provision of clear and timely instruction and supervision by the individual of those involved in the implementation and monitoring of environmental policies

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • award and enterprise agreements and relevant industrial instruments • relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety, environmental and energy efficiency issues, equal opportunity, industrial relations and anti-discrimination • relevant industry code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Environmental and energy efficiency information may include:	• organisational policies and procedures • relevant environmental and energy efficiency legislative requirements • voluntary environmental agreements entered into with external organisations • continuous improvement policies and processes for the organisation
Work team may include:	• formal or unstructured groups, and two or more people
Environmental and energy efficiency **performance** may include:	• resource efficiency • minimisation of waste • recycling • reduction in use of non-renewable resources • all environmental incidents
Some approaches to environmental and energy efficiency **performance** may include:	• preventing and minimising the production of pollution (e.g. discharges to air, land and water, hazardous waste) • applying energy efficiency systems, action plans, surveys and audits

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	• improving the company's operational energy consumption including stationary and non-stationery (transport) energy • improving housekeeping (e.g. using a broom instead of a hose, using old rags for cleaning instead of toxic cleaners or water) • substituting materials (e.g. replacing toxic, solvent-based coatings with water-based ones) • changing processes (e.g. mechanical cleaning, redesign of products/procedures so that materials are used more efficiently)
Business sustainability means:	• a sustainable business in this sense is profitable and competitive. Effective management of environmental impacts and energy efficiency initiatives can contribute to business sustainability by reducing costs, differentiating goods and services and contributing to a better corporate image
Environmental and energy efficiency risks may be identified as and may be assessed:	• actual and potential sources of waste • on an ongoing basis • with regard to probability, scale and likely impact on business performance
Environmental and energy efficiency policies and procedures may include:	• addressing energy efficiency and environmental initiatives such as environmental management systems, action plans, surveys and audits • determining company's most appropriate waste treatment including waste to landfill, recycling and wastewater treatment • initiating and/or maintaining appropriate company procedures for operational energy consumption, including stationary energy and non-stationary (transport) • initiating and/or maintaining appropriate company policy for energy efficiency and environmental initiatives, for example environmental management systems, action plans, surveys and audits • developing energy use and waste management options/action plan to reduce energy consumption and improve waste management • monitoring energy usage and waste treatment via progress reports on energy use and waste treatment and/or key performance indicators that measure performance (e.g. energy usage

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	or waste minimisation achievements) • delivering policies and procedures appropriately, for example through internal resources, service providers and/or consultancies
Environmental and energy efficiency management policies must be appropriate to the scope and scale of the business and may include:	• environmental load reduction • energy consumption recommendations and waste minimisation and recycling • tenders for the provision of goods and services that specify environmentally preferred selection criteria • protection of land and habitat • environmentally sustainable work practices and energy efficiency initiatives
Environmental and energy efficiency improvement plans may:	• be established at management level and may include measuring, monitoring and recording environmental performance, monitoring and recording energy consumption and continually setting targets for measurable improvements. Improvement plans may deal with paper, energy use, general waste, transport use, etc
Supply chain:	• is a key determinant of environmental and energy efficiency performance and may include suppliers, contractors or others acting on organisation's behalf
Environmental and energy efficiency training:	• should be integrated into the organisation's existing training arrangements

Unit Sector(s)

Environment

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIENV501A Implement and maintain environmental management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation and maintenance of site environmental management plans in resources and infrastructure industries. It includes the requirements to: develop the framework of the plan, the processes to support the plan; prepare and implement the plan; and monitoring, reviewing and updating the management processes.

Application of the Unit

This unit is appropriate for those working in a management or as a technical specialist roles, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop the framework for the site environmental management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the implementation and maintenance of site environmental management plans 1.2. Develop and document site ***environmental objectives*** in ***consultation with relevant personnel***, and conforming to the organisation's ***policy*** and ***system's procedures*** 1.3. Develop and document the structures for the application of the environmental management system, in consultation with relevant personnel, and conforming to the organisation's ***policy*** and ***system's procedures*** 1.4. Define, allocate and document the responsibilities for applying the environmental management plan in job descriptions and duty statement for all relevant site positions
2. Develop the processes to support the site environmental management plan	2.1. Identify existing and potential site environmental ***hazards*** and ***risks*** from trends identified from site inspection and the record system 2.2. Access, interpret and clarify the organisation's criteria for assessing and treating risks 2.3. Develop and document detailed site procedures and practices for the application of the environmental management system in consultation with relevant personnel 2.4. Identify, obtain and maintain information sources and expert advice required to support the environmental management plan
3. Prepare and implement the plan	3.1. Plan, schedule and document how the environmental management plan will be introduced to the entire worksite 3.2. Identify, seek and/or provide ***resources*** for the operation of the environmental management plan, in a timely and consistent manner

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	3.3. Provide and explain information on the site environmental management plan in a form readily accessible to site employees 3.4. Provide or arrange appropriate development and/or training for site personnel on the environmental management plan ***site procedures and practices*** 3.5. Make available information on known and intended process changes and enhancements to ***site personnel*** 3.6. Provide support and encouragement to those responsible for the conduct of the plan's activities 3.7. Ensure all environmental management plan ***records and reports****are* produced, processed and maintained
4. Monitor, review and update the environmental management processes	4.1. ***Monitor*** the environmental management plan activities and achievement targets and provide/focus ***resources*** to ensure the implementation plan is satisfied 4.2. Review and update the environmental management plans implementation plan periodically and when changing circumstances are anticipated or occur 4.3. Complete and retain environmental management plans documentation covering the reasons for and changes made

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement and maintain environmental management plans:

- apply legislative, organisation and site requirements and procedures
- apply site procedures and practices development and maintenance techniques
- read, interpret, apply and communicate technical information, rules, procedures and regulations
- apply management planning documentation and facilitatation procedures
- apply records and documents maintenance requirements
- apply procedures for monitoring and deciding on changes to process
- provide leadership and guidance for group activities
- communicate effectively in the workplace
- explain complex information to superiors and subordinates
- apply coaching and mentoring support
- apply active listening
- show sensitivity to the needs and feelings of others
- actively encourage the free exchange of information

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement and maintain environmental management plans:

- the organisation's environmental policies, goals and objectives
- legislative requirements
- roles and responsibilities of personnel within the organisation
- action planning methods
- negotiation skill
- written and oral communication methods
- receptive listening skills
- human resource management processes
- method of identifying appropriate action based on cost, safety, and welfare issues
- work procedure and instruction writing
- environmental management reporting and recording procedures
- worksite operating procedures
- environmental hazard identification processes

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- environmental risk assessment processes
- environmental risk treatment processes
- environmental management system documentation methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation and maintenance of site environmental management plans • implementation of procedures and techniques for the safe, effective and efficient implementation and maintenance of site environmental management plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the site environmental management plan required outcomes • working with others to undertake and complete the implementation and maintenance of site environmental management plans • consistent successful implementation and maintenance of site environmental management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's knowledge required to undertake the implementation and maintenance of site environmental management plans
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of site environmental management plans that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary

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	evidence of the candidate's: • working with others to undertake and complete the implementation and maintenance of site environmental management plans • provision of clear and timely required support and advice on the implementation and maintenance of site environmental management plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Consultation with relevant personnel would typically include:	• senior management • subject matter experts • regulatory authorities • tenderers • project managers • contractors • employees • community • customers • suppliers
The **policy** is:	• the statement of overall intent and direction of the organisation in respect of the environmental management
The **system's procedures** are:	• the procedures that support and expand on the policy and set out the requirements for implementing the environmental management system on individual sites. They provide direction and guidance to those responsible for implementation and the preparation of site-specific work procedures, instruction and practices
System's procedures may include:	• identification of hazards • risk identification • risk assessment • risk treatment • interim solutions

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	• dealing with unplanned incidents and events • consultation • communication • monitoring • review • record keeping • reporting • training
Hazards are:	• sources of potential harm or situations with the potential to cause loss
Risk identification is:	• the process of determining what can happen, why and how
Risk assessment is:	• the overall process of risk analysis and risk evaluation
Risk treatment is:	• the selection and implementation of appropriate options for dealing with risk
Risk treatment should:	• consider using options in sequence from eliminating the hazard, substitution, engineering controls, administrative controls and, finally, PPE
Site procedures and practices may include:	• standard operating procedures • safe operating procedures • work instructions • emergency procedures • allocation of responsibilities • permit requirements • sampling, testing and worksite inspection requirements • documentation and reporting requirements
Site personnel may include:	• employees • contractors
Records and reports may include:	• results • recommendations • assessment forms • action planning documents
Monitor is to:	• check, supervise, observe critically, or record the progress of an activity, action or system on a regular basis in order to identify change
Resources may include:	• people • finance • equipment

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	• buildings/facilities • technology • information

Unit Sector(s)

Environment

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIENV502A Undertake process or project environmental impact assessment

Modification History

Not applicable.

Unit Descriptor

This unit covers undertaking of process or project environmental impact assessment in the mining or extractive industries. It includes: describing the process or project and the development environment; identifying their environmental issues; assessing environmental impacts; and evaluating alternatives.

Application of the Unit

This unit applies to undertaking a local environmental impact assessment of site based processes or projects dealing with mine operations. It may include conduct of a simple checklist audit against company and local requirements. It is appropriate for those working in a management or technical specialist role, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Describe process or project and the development environment	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Prepare detailed description of the process or ***project*** environment before development 1.3. Prepare process or project life cycle with detailed information on all phases
2. Identify environmental issues for process or project	2.1. Work with engineers and scientists to identify ***environmental issues*** 2.2. Assess each part of the process or project for impact on the local ecosystem 2.3. State assessment criteria clearly 2.4. Identify both positive and negative impacts 2.5. Evaluate risks and hazards associated with the process or project, both short and long term
3. Assess environmental impact	3.1. Assess process or project against environmental regulations, site terms, conditions and licences and company policy 3.2. Make qualified and justified assessment of impact on environment 3.3. Ensure ***assessment documents*** are used as the scientific basis for assessment 3.4. Present assessment in clearly written and illustrated format
4. Evaluate alternatives	4.1. Ensure all practical solutions to impact assessment are included in analysis 4.2. Prepare objective and scientifically valid alternatives 4.3. Prepare comparisons using cost benefit analysis where possible 4.4. Identify alternative processes or amended project to minimise environmental impact

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to undertake process or project environmental impact assessment:

- apply legislative, organisation and site requirements and procedures
- write advanced reports
- solve problems
- operate computer data analysis systems (database, spreadsheet, specialist programs)
- assess risks and hazards
- perform financial assessments
- plan projects

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to undertake process or project environmental impact assessment:

- company environmental policy and procedures
- process or project and/or proposal phases
- physical environment as impacted by mining operations
- ecological environment as impacted by mining operations
- land use profiles
- social issues as impacted by mining operations
- impact of mining operations on infrastructure
- legislation, regulation, licences and permit requirements for mining operations
- data analysis systems, including statistical analysis
- support professions role and function (engineers, scientists etc)
- budgeting and cost cycle planning

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for undertaking process or project environmental impact assessment • implementation of procedures and techniques for the safe, effective and efficient undertaking of process or project environmental impact assessment • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of the options that best meet the required outcomes • working with others to undertake and complete process or project environmental impact assessment • consistent successful completion of process or project environmental impact assessment
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's knowledge required to undertake process or project environmental impact assessments
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and

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	complete process or project environmental impact assessments • provision of clear and timely required support and advice on the undertake of process or project environmental impact assessments
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Environment assessment documents may include:	• EIA - Environmental Impact Assessment • EIS - Environmental Impact Statement • PER - Public Environmental Report • NOI - Notice of Intention
Environment may include:	• physical • biological • social • regional • land uses • tenures • climate • geology • landforms • soils • surface and ground water • water quality • air quality • hydrology • dust and noise • pollutants • contaminants • vegetation, plant diseases, clearance and weeds • animal life, habitats, mobility, threats • rare and endangered species • community infrastructure

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	• ethnography of area • archaeology • regional and local demography

Environmental issues may include:	• physical issues including:
	  • significant land disturbance
	  • erosion, subsidence and instability
	  • alteration of water courses
	  • effects on quality, quantity or availability of surface water or groundwater
	  • salination of water or land
	  • acid drainage
	  • heavy metal contamination
	  • impact on coastal processes
	• ecological issues including:
	  • direct impacts on vegetation
	  • loss of habitat
	  • displacement of fauna
	  • impact on ecological processes
	  • loss of biodiversity
	  • potential for spreading plant diseases and noxious weeds
	  • impact of toxic or hazardous materials
	  • creation of new habitats
	• land use issues including:
	  • major changes of land use
	  • compatibility of development with surrounding land uses
	  • preclusion of alternative land use e.g. conservation or recreation
	  • increased demand on scarce natural resources
	  • creation of new water storage and supplies
	  • creation of opportunities for alternative beneficial land uses
	• social issues including:
	  • influx of population
	  • impact on health and safety
	  • changes in community character
	  • creation of employment
	  • increased revenue for local communities

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	• community and cultural aspects • infrastructure issues including: • load on existing roads • impact on services including utilities, health, education, community services
Project phases may include:	• site preparation • construction • operations • proposed expansions • decommissioning • rehabilitation • site closure

Unit Sector(s)

Environment

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIENV601A Establish and maintain the environmental management system

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintenance of the environmental management systems in resources and infrastructure industries. It includes establishing and maintaining: the framework and participative arrangements for the environmental management system; procedures for identifying environmental hazards, for assessing environmental risk, and for treating environmental risk; organisational procedures for dealing with hazardous environmental events; environmental training programs; a system for environmental records; and evaluation of the organisation's environmental system and related policies, procedures and programs.

Application of the Unit

This unit is appropriate for those working in management or technical specialist role, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish and maintain the framework for the environmental management system	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining environmental management systems 1.2. Develop, document and have approved ***policies*** and ***system procedures*** that clearly express the organisation's commitment to environmental management and how relevant environmental legislation will be implemented, consistent with overall organisational policies 1.3. Define, allocate and include in job descriptions and duty statements for all ***relevant positions***, responsibilities and duties that will allow implementation and integration of the ***environmental management systems*** 1.4. Identify, source and/or provide the ***resources*** for the operation of the environmental system in a timely and consistent manner 1.5. Provide and explain information on environmental management system and procedures for the area of responsibility in a form readily accessible to employees
2. Establish and maintain participative arrangements for the environmental management system	2.1. Establish and ensure the maintenance of appropriate consultative processes, in consultation with employees and their representatives 2.2. Ensure issues raised through participation and ***consultation*** are dealt with and resolved promptly and effectively in accordance with procedures for issue resolution 2.3. Ensure information about the outcomes of participation and consultation is provided in a manner accessible to employees
3. Establish and maintain procedures for identifying environmental hazards	3.1. Ensure existing and potential environmental hazards are identified and confirmed through site inspection and trends identified from the environmental record system

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	3.2. Develop and maintain system procedures for the ongoing identifying of existing and potential environmental hazards and ensure the implementation of these procedures in site procedures and systems of work 3.3. Monitor activities to ensure that environmental hazard identification procedure is adopted effectively throughout the organisation 3.4. Ensure procedures are in place and applied for environmental hazard identification at the planning, design and evaluation stages of any change in the workplace to ensure that new hazards are not created
4. Establish and maintain procedures for assessing environmental risk	4.1. Ensure appropriate ***assessment of risks*** presented by identified environmental hazards is carried out 4.2. Develop a system procedure for ongoing assessment of risks and ensure its integration within site procedures and systems of and work 4.3. Monitor activities to ensure that risk assessment procedure is adopted effectively throughout the organisation 4.4. Ensure procedures are in place for risk assessment to be addressed at the planning, design and evaluation stages of any change within the organisation to ensure that risks are not created
5. Establish and maintain procedures for treating environmental risks	5.1. Develop and ensure implementation of measures to ***treat assessed risks*** 5.2. Ensure the implementation of interim solutions until a permanent control measure is developed when measures which treat a risk at its source are not immediately practicable 5.3. Develop system procedures for ongoing ***control of risks*** and ensure their integration within site procedures and general systems of work 5.4. Monitor activities to ensure that the risk treatment procedure is adopted effectively throughout the organisation 5.5. Ensure risk treatment is addressed at the planning, design and evaluation stages of

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	any change within the organisation to ensure that adequate risk control measures are included 5.6. Identify inadequacies in existing risk treatment measures and seek and provide resources to enable implementation of new measures according to appropriate procedures
6. Establish and maintain organisational procedures for dealing with hazardous environmental events	6.1. Identify the range of most likely potential hazardous environmental events 6.2. Develop systems procedures in consultation with appropriate emergency services that would treat the risks associated with the potential hazardous events that meet legislative requirements, as a minimum 6.3. Provide appropriate information and training to all employees to enable implementation of the correct procedures in all relevant circumstances
7. Establish and maintain an environmental training program	7.1. Develop and ensure implementation of an environmental training program to identify and fulfil employees' environmental training needs
8. Establish and maintain a system for environmental records	8.1. Establish and monitor the system for keeping environmental records to allow identification of patterns of environmental non-compliance within the organisation
9. Evaluate the organisation's environmental system and related policies, procedures and programs	9.1. Assess the effectiveness of the organisation's environmental management system and related policies, procedures and programs in accordance with the organisation's goals and objectives and statutory requirements 9.2. Develop and ensure implementation of improvements to the environmental management system to ensure more effective achievement of the organisation's aims with respect to the environmental management 9.3. Assess compliance with compliance documentation and code of practice to ensure that legal environmental standards are maintained, as a minimum

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain the environmental management system:

- apply legislative, organisation and site requirements and procedures
- access and analyse archival and historical information on worksite environmental matters
- access, interpret and apply technical environmental information
- apply and manage research techniques and activities
- apply systems audit procedures
- communicate effectively in the workplace
- develop and introduce practices to improve environmental performance in the workplace
- develop and maintain risk management procedures and policies
- develop and maintain statutory/legal and organisational policies and procedures
- explain complex information to superiors/subordinates
- apply records and documents maintenance requirements
- apply procedures to monitor and decide on changes to process
- provide coaching and mentoring support
- take a leading role in initiating action and making decisions
- use effective consultative mechanisms to negotiate processes and procedures appropriate to workplace environmental performance

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain the environmental management system:

- environmental legislation, policies and code of practice
- environmental auditing
- statutory/legal control
- duty of care
- training design and management
- emergency procedures
- strategic planning
- human resource management
- statutory and site rules, policies, procedures and regulations

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- risk management processes and techniques
- action planning methods
- continuous improvement processes
- company policies

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishment and maintenance of the environmental management system • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of environmental management systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of those that best meet the required outcomes • working with others to undertake and complete the establishment and maintenance of environmental management systems • timely completion of the establishment and maintenance of environmental management system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of policies and procedures that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the establishment and maintenance of environmental management

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	systems • timely gaining of approval of the environmental management systems policies and procedures • provision of clear, timely required support and advice on the implementation and maintenance of environmental management systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Environmental policy is:	• the statement by the organisation of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets
System's procedures are:	• the procedures that support and expand on the policy and set out the requirements for implementing the system on individual sites • they provide direction and guidance to those responsible for implementation of the system and in the preparation of site specific work procedures, instruction and practices to put the system into effect
System's procedures may include:	• identification of hazards • risk identification • risk assessment • risk treatment • interim solutions • dealing with unplanned incidents and events • consultation • communication • monitoring • review • record keeping • reporting • training

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Relevant positions may include:	• managers • supervisors • environmental officer/manager • laboratory personnel • all worksite personnel
Environmental Management Systems (**EMS**) are the part of the overall management system which includes	• organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy, and so managing the environmental risks associated with the business of the organisation
Resources may include:	• people • finance • buildings/facilities • technology • information
Consultation may include:	• environmental committees • consultation with health and safety representatives • issue resolution procedures • participative/consultative procedures conducted by supervisory staff within the area of managerial responsibility
Existing and potential hazards can be identified from:	• site inspections • checklists • hazard identification processes • hazardous event reports • significant incident reports
Hazard is:	• a source of potential harm or a situation with the potential to cause loss
Monitoring may include:	• review of written reports • performance appraisal • auditing procedures
Hazard identification is:	• the process of recognising that a hazard exists and defining its characteristics
Risk is:	• the chance of something happening that will have an impact upon objectives • It is measured in terms of consequence and likelihood
Risk assessment is:	• the overall process of risk analysis and risk evaluation

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Risk treatment is:	• the selection and implementation of appropriate options for dealing with risk
Risk control is:	• that part of risk management which involves the implementation of policies, standards, procedures and physical changes to eliminate or minimise adverse risks

Unit Sector(s)

Environment

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR201A Conduct fire team operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of fire team operations in resources and infrastructure industries. It includes the planning and preparing for work, fighting or containing fires and finalising operations.

Application of the Unit

This unit is appropriate for those working in operational, service or maintenance roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to fire team operations 1.2. Identify and confirm personal safety requirements and the individual's role in the fire team 1.3. Identify and clarify fire risks in the site and the likely impact and responses to site specific hazards 1.4. Identify ***types of fire fighting appliances*** and confirm their applications 1.5. Identify and confirm location and range of appliances held at relevant fire boards, depots, sub-stations and stations by site visit
2. Fight or contain fires	2.1. Receive, clarify and confirm notification of fire operations from the appropriate authority 2.2. Move to the fire site in accordance with site procedures 2.3. Identify and pass details, or receive and clarify the type, nature, source and intensity of the ***fire*** to appropriate authorities 2.4. Select appliances and equipment appropriate to the fire circumstances and apply in accordance with manufacturer and/or site instructions 2.5. Continually monitor conditions in the fire area and modify fire fighting techniques/applications to reduce the impact of identified and ***potential hazards*** 2.6. Avoid unnecessary risks to the individual and other team members and follow evacuation procedures in accordance with site rules 2.7. Apply isolation procedures in accordance with site rules
3. Finalise the operation	3.1. Avoid fire recurrence by the appropriate processes, including watering, rake down and chemical means 3.2. Isolate, rope-off, secure and monitor fire

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	area in accordance with site procedures 3.3. Clean and inspect appliances and equipment and replace in the designated location or process for maintenance and repair 3.4. Undertake debriefs and complete records in accordance with site procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct fire team operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical fire operational information
- apply hazard and potential hazard identification procedures
- assess required responses
- apply evacuation procedures
- apply fire fighting techniques
- administer First Aid
- use hand tools
- work as a team member
- apply isolation and tagging

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct fire team operations:

- legislative and site rules
- causes, characteristics, hazards and responses to the types of fire
- site gases and characteristics
- basic site geology and survey information related to fire operations
- basic building structural information related to fire operations
- fire fighting equipment
- fire fighting techniques
- isolation and tagging procedures
- basic teamwork
- critical situation dynamics and control
- communication and reporting procedures
- initial response First Aid

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting fire team operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of fire team operations • working with others to undertake and complete the fire team operations that meets all of the required outcomes • consistent timely completion of fire team operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete fire team operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Types of fire fighting appliances may include:	• extinguishers • hoses - water • expansion foam • expansion foam generator • spanners • nozzles • breaches • hand tools • water pumps
Types of fire are:	• as per Australian standards
Potential hazards may include:	• smoke • heat • roof and rib • buildings • chemicals • gases • ventilation

Unit Sector(s)

Emergency Response and Rescue

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR202A Contribute to the control of emergencies and critical situations

Modification History

Not applicable.

Unit Descriptor

This unit covers contributing to the control of emergencies and critical situations in the oil and gas drilling industry. It includes: planning and preparation for operations; contributing to the control of critical situations; responding to emergencies; complying with rig procedure; participating in fire drills; demonstrating safe work procedures; and assisting in manual handling risk assessment.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the control of oils and gas drilling emergencies and critical situations 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Contribute to the control of critical situations	2.1. Conform to safe working practices current legislative and operational requirements 2.2. Identify developing, emerging and existing critical situations and take actions appropriate to the situation 2.3. Activate relevant alarms in accordance with operational requirements 2.4. Identify, interpret and apply duties of floorman and drill floor crew in quickly and competently closing the well 2.5. Identify, interpret and apply well kick signs 2.6. Locate full opening safety valve, BOP and flow control head 2.7. Give assistance in First Aid and medivac procedures as detailed in policies and procedures 2.8. Take actions to control and alleviate the situation in accordance with operational and legislative requirements 2.9. Monitor the situation and take relevant actions to minimise risks to personnel, environment, process, plant and equipment 2.10. Maintain reporting requirements in the event of a critical situation in accordance with safety management systems
3. Respond to emergencies in other areas	3.1. Conform to safe working practices and current legislative and operational requirements 3.2. Identify developing, emerging and existing

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	critical situations and take actions appropriate to the situation 3.3. Activate relevant alarms in accordance with operational requirements 3.4. Give clear, accurate information in relation to the emergency in a suitable format for the needs of relevant personnel 3.5. Adhere to agreed emergency procedures in accordance with operational requirements 3.6. Take immediate action to make the situation safe, minimise risks to personnel, environment, process, plant and equipment
4. Comply with rig safety procedures	4.1. Obtain and wear personal protective equipment, appropriate to task 4.2. Read, interpret and apply signals and safe working procedures for operation of man riding and air hoists 4.3. Obtain lift authorisation 4.4. Inspect riding harness and hoist 4.5. Read, interpret and apply lock-out and tagging procedures as detailed in company policy and procedural documents 4.6. Read, interpret and apply permit to work system as detailed in company policy and procedural documents 4.7. Attend and participate in pit drills and safety meetings
5. Participate in fire drills	5.1. Recognise and comply with fire alarm signals 5.2. Operate portable extinguishing equipment, fire hose and nozzles in accordance with manufacturer's and/or company procedures 5.3. Identify and comply with fire team responsibilities 5.4. Identify assigned fire/boat station and follow procedures
6. Demonstrate safe working procedures	6.1. Set and pull manual slips correctly 6.2. Operate make-up and break-out manual tongs correctly 6.3. Move drill floor drilling tools and equipment in accordance with company and statutory safe operating procedures
7. Assist in manual handling risk	7.1. Interpret/apply national standards and code

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assessment	of practice for manual handling 7.2. Apply correct manual handling techniques when lifting pushing, pulling, carrying or restraining animate or inanimate objects

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to contribute to the control of emergencies and critical situations:

- apply legislative, organisation and site requirements and procedures
- apply personal protection requirements appropriate to the environment
- recognise effects of changes of ambient conditions on operations
- locate sources of information and interpret drawings and manuals
- operate equipment
- set and pull manual slips
- operate manual make-up tongs
- operate manual break-out tongs
- move drills, tools and equipment around drill floor
- wear correct protective clothing for the execution of duties and tasks
- assist in the risk assessment of a manual handling task
- demonstrate correct manual handling techniques
- act as chairman of safety meeting

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to contribute to the control of emergencies and critical situations:

- occupational health and safety obligations
- company and statutory guidelines, procedures and practices
- emergency procedures
- fire and gas control system
- permit to work system
- well kicks
- operation of full-opening safety valve, and inside bop
- manual duties of each rig crew member during a well kick drill
- emergency shutdown control system
- effects of loss of any utility and its reinstatement
- functioning of process control, including instrumentation
- equipment layout and its connection with other systems
- lockout/tag out operations
- rig audit

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- rig maintenance
- normal drilling operations
- non-routine drilling operations
- man management/rig management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for controlling emergencies and critical situations • implementation of requirements, procedures and techniques for the safe, effective and efficient contribution to the control of emergencies and critical situations • working with others to control emergencies and critical situations that meet all of the required outcomes • consistent timely contribution to the control of emergencies and critical situations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to control emergencies and critical situations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Critical situation may include, but are not limited to:	• operational difficulties • extreme weather • equipment failure • leaks • fires • kicks

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• participate in pre-tour safety meetings
	• review hazard control procedures (e.g. JSA)
	• follow safe operating procedures
	• assist as required and trained
	• safety briefing/induction
	• weekly safety meetings
	• agreed procedures may include:
	  • company
	  • facility
	  • client
	• toolbox
	• permit to work

Reporting requirements may include:	• oral • written
Coordination requirements may include:	• rig team • other equipment operators • maintenance personnel • supervisors

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Working practices may include:	• individual operation • team operation • use of personal protective equipment • consideration of toxic substances (e.g. H_2S) • continuous communication maintained • reacting to on-site emergencies • hang-off procedures • securing for severe weather • signalman's duties
Alarms may include:	• audible • warning gestures • oral warnings • fixed system specific to installation
Relevant **actions** taken to control and alleviate critical situations may include:	• make safe • isolate • shutdown • evacuate work area • report • record • contain • rectify
Safety management systems may include, but are not limited to:	• organisational • installation
Information formats may include:	• oral • telephone • public address system • radio • hand signals
Personal protective equipment may include:	• safety helmet • safety footwear • safety glasses • gloves • riding belt • safety belt • life vest • safety goggles • H_2S equipment • fire resistant clothing • breathing apparatus

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Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR203B Escape from hazardous situation unaided

Modification History

Not applicable.

Unit Descriptor

This unit covers escaping from hazardous situation unaided in the underground mining industries. It includes: assessing and withdrawing from hazardous situations; evacuating to fresh air; reporting and debriefing.

Application of the Unit

This unit is appropriate for those working in operational, service and maintenance roles, in underground mines, within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess and withdraw from hazardous situation	1.1 Access, interpret and apply ***compliance documentation*** relevant to escaping from hazardous situation unaided 1.2 Interpret alarms and indicators to determine the type, ***cause*** and severity of the hazard 1.3 Assess threat/danger and decide on the safest escape option and ***escape route*** in liaison with other workers in the vicinity and notify appropriate personnel as per site requirements 1.4 If safe, withdraw from hazardous situation by proceeding to selected escape route 1.5 Don self-contained self rescuer and/or other recommended personal protective equipment according to manufacturer's instructions and/or site requirements 1.6 Evaluate the need to barricade-in and wait for external aided rescue
2. Evacuate to fresh air	2.1 Evacuate from hazardous situation by the established or alternative escape route and notify appropriate personnel as per site requirements 2.2 Follow escape route markers and guidance system to navigate escape route at optimum rate of travel 2.3 Continuously monitor and observe the mine atmosphere and ***mine environmental conditions*** and respond to adverse conditions 2.4 Evaluate if it is an ***irrespirable atmosphere*** and locate and access self rescuer/breathing apparatus caches and utilise according to manufacturer's and site requirements 2.5 Evaluate the need for, and locate and retreat to, a place of safety or build barricade/s for protection from adverse conditions 2.6 Monitor air/oxygen usage and adjust rate of travel where necessary, and ensure efficient changeover of ***self rescuer/breathing apparatus*** within determined operational timeframes
3. Report and debrief	3.1 Provide details of escape to relevant personnel in accordance with legislation and site requirements 3.2 Evaluate the need for voluntary counselling

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct local risk control:

- apply legislative, organisation and site requirements and procedures
- apply risk management processes and techniques
- inspect, put on and use self rescuer/breathing apparatus
- interpret and respond to adverse environmental conditions
- read mine plans and orientate and navigate in mine
- identify alternative escape routes
- access and use self escape equipment
- observe hygiene requirements
- communicate effectively
- observe and report mine conditions
- access, interpret and apply data from monitoring systems and equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct local risk control:

- legislative and site requirements for self escape
- risk management processes and techniques
- types and causes of hazards and incidents in underground mines
- key indicators of mine incidents
- relevant geological and survey data
- effects of hot and humid atmospheres
- location and distribution of caches
- trigger points to initiate emergency response to alarms
- barricades and barricading methods
- location and purpose of a place of safety
- orientation and navigation in mines
- guidance systems and markers
- site emergency plans
- implications of lack of visibility
- site communication systems
- escape routes and alternative escape routes
- types of adverse environmental conditions such as smoke, visibility, dust, water, and mud

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- basic ventilation systems
- types and effects of mine gases
- travel speeds
- monitoring systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for escaping from hazardous situation unaided • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of escape from hazardous situation unaided • working with others to undertake and complete escape from hazardous situation unaided that meets all of the required outcomes • consistent timely completion of procedures for escaping from hazardous situation unaided that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate: • - undertaking and completing escape from hazardous situation unaided
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Causes of hazards may include:	• explosion • fire • roof fall • strata • inrush • irrespirable atmosphere • Hazchem • explosives • vehicle accidents • wall collapse • underground explosion or fire • ignition • rock burst/outburst • spontaneous combustion • environmental incidents • hot and humid atmospheres • wind blast • excessive dust
Escape route markers and guidance systems may include:	• signs • rope and cone system • streamers • reflective tape • rope • conveyor belt structure • electronic guidance systems

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	• chemical light guidance systems • reflective droppers • pipes and cables
Mine environmental conditions may include:	• temperature • humidity • noise • gas levels • dust and air-borne contaminants • condition of roof and sides • water/mud levels • condition of walkways/escape ways • ventilation • decreased visibility

Irrespirable atmosphere is considered:	• an atmosphere which is unsafe for a person to breathe as a result of either oxygen depletion or the presence of:
	  • toxic fumes
	  • gases
	  • contaminants

Self rescuer/breathing apparatus may include:	• self-contained closed oxygen breathing apparatus (including chemically produced oxygen) • self-contained open circuit compressed air breathing apparatus • self-contained oxygen based self rescuers

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR204A Provide aided rescue to endangered personnel

Modification History

Not applicable.

Unit Descriptor

This unit covers providing aided rescue to endangered personnel in underground mines. It includes assessing the incident scene and planning the rescue strategy; extricating and evacuating to fresh air; and carrying out post-incident requirements.

Application of the Unit

This unit is appropriate for those working in operational, service and maintenance roles, in underground mines, within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess incident scene and plan rescue strategy	1.1. Access, interpret and apply ***compliance documentation*** relevant to providing aided rescue to endangered personnel in underground mines 1.2. Obtain and interpret ***incident*** information and data to determine the hazards involved in the rescue operation, including mine monitoring data and trends 1.3. Determine the locations of endangered mine worker(s) and the best route and method to travel to that location 1.4. Determine the best location for a fresh air base 1.5. Establish ***communication*** with emergency control personnel and fresh air base 1.6. Test and check emergency equipment 1.7. Test the mine atmosphere and determine if it is an ***irrespirable atmosphere*** 1.8. Obtain the personal protective equipment (PPE) and breathing apparatus as determined by the incident management team 1.9. Assess the situation to select the safest, most effective, extrication method from entrapment 1.10. Assess threats/dangers to mine worker and rescuer 1.11. Communicate effectively with emergency control personnel 1.12. Locate and access emergency breathing apparatus caches 1.13. Identify the need for, and organise additional ***rescue resources and equipment*** 1.14. With reference to the mine plan, identify escape route and alternative escape route from the incident scene to fresh air base 1.15. Confirm the rescue strategy as determined by the incident management team
2. Extricate and evacuate to fresh	2.1. Isolate mine services when required, and

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air	secure incident site for safe entry 2.2. Assess ***physical*** and ***emotional conditions of mine workers*** and administer emergency First Aid and provide support where necessary 2.3. Don and test the breathing apparatus to manufacturer's guidelines 2.4. Extricate mine worker from entrapment according to the agreed plan 2.5. Evacuate from incident scene, following escape strategy, by the established or alternative escape route 2.6. Follow determined route of travel at optimum rate of travel 2.7. Continuously monitor the mine atmosphere and ***mine environmental conditions*** 2.8. Evaluate the need for, and locate and retreat to a place of safety/build barricade to protect personnel from adverse conditions if necessary 2.9. Maintain communication with emergency control and fresh air base personnel to advise of progress and receive support information/instruction 2.10. Monitor physical and emotional condition of mine worker(s) and other rescue team members and provide support 2.11. Monitor air/oxygen usage and adjust rate of travel where necessary 2.12. Ensure efficient changeover/refill of ***self rescuer***/***breathing apparatus*** within determined operational timeframes
3. Carry out post-incident requirements	3.1. Provide details of rescue to relevant personnel in accordance to legislation and site requirements 3.2. Evaluate the need for, and refer mine worker(s) and self for voluntary counselling

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to provide aided rescue to endangered personnel:

- apply legislative, organisation and site requirements and procedures
- obtain and interpret incident information and data
- apply risk management processes and techniques
- inspect, put on and use breathing apparatus
- interpret and respond to adverse environmental conditions
- read mine plans and orientate and navigate in mine
- use communication systems
- identify alternative escape routes
- access and use self escape equipment
- work as a team member
- communicate effectively
- observe and report mine conditions
- access, interpret and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- observe hygiene requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to provide aided rescue to endangered personnel:

- legislative and site requirements for rescue operations
- risk management and assessment
- types and causes of incidents in underground mines
- key indicators of mine incidents
- relevant geological and survey data
- effects of hot and humid atmospheres
- location and distribution of caches
- trigger points to initiate emergency response to alarms
- barricades and barricading methods
- location and purpose of a place of safety
- orientation and navigation in mines
- evacuation resources and equipment

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- guidance systems and markers
- mine emergency plans
- implications of lack of visibility
- escape routes and alternative escape routes
- types of adverse environmental conditions such as smoke, visibility, dust, water
- basic ventilation systems
- types and effects of mine gases
- emotional conditions experienced by mine workers
- emergency First Aid
- travel speeds
- signs and symptoms of heat-related illnesses
- isolation of mine energy sources
- monitoring systems
- communication systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for providing aided rescue to endangered personnel • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of aided rescue of endangered personnel • working with others to undertake and complete the aided rescue of endangered personnel that meets all of the required outcomes • consistent timely completion of procedures for providing aided rescue to endangered personnel that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to provide aided rescue to endangered personnel

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Incidents may include:	• major accident or fatality • underground explosion or fire • ignition • rock burst/outburst • spontaneous combustion • environmental incidents
Causes of **incidents** may include:	• explosion • fire • roof fall • strata • inrush • irrespirable atmosphere • Hazchem • explosives • vehicle accidents • wall collapse • wind blast • rupture to gas drainage lines • disruption to ventilation • hot and humid atmosphere
Communications may include:	• radio • telephone • telemetry • verbal • written

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	• computers • runners • DAC • PED • signals

Irrespirable atmosphere is considered:	• an atmosphere which is unsafe for a person to breathe as a result of either oxygen depletion or the presence of:
	  • toxic fumes
	  • gases
	  • contaminants

Rescue resources and equipment may include:	• vehicles/ transport • competent personnel • breathing equipment • safety/emergency equipment • atmosphere monitoring equipment • hydraulic and pneumatic rescue equipment • rope equipment • mining equipment • incident-specific equipment such as body bags • specialised equipment from external sources • monitoring and analysis equipment • refuge/change-over stations • inertisation plant • emergency communication equipment • First Aid/resuscitation equipment
Physical conditions of a mineworker may include:	• heat-related illness • injuries from slips/trips/falls • respiratory problems • physical exhaustion • nausea • gas poisoning • excessive oxygen use
Emotional conditions of a mineworker may include:	• panic • fright • stress • distress • claustrophobia • anxiety • indecision • impaired judgement

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Mine environmental conditions may include:	• temperature • humidity • noise • gas levels • dust and air-borne contaminants • condition of roof and sides • water/mud • drive conditions • reduced visibility
Self rescuer/breathing apparatus may include:	• self-contained closed oxygen breathing apparatus, including chemically produced oxygen • self-contained open circuit compressed air breathing apparatus • self-contained oxygen based self rescuer

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR205A Apply initial response First Aid

Modification History

Not applicable.

Unit Descriptor

This unit covers the application of initial response First Aid in the mining industry. It includes: assessing the situation; applying First Aid; and recording and reporting the situation.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess the situation	1.1. Identify ***physical hazards*** to own and others' health and safety 1.2. Minimise immediate ***risk*** to self, and health and safety of the casualty, by controlling hazards in accordance with site and OHS requirements 1.3. Assess casualty's ***vital signs*** and physical condition in accordance with workplace procedures
2. Apply First Aid	2.1. Provide ***First Aid management*** in accordance with established ***First Aid*** procedures 2.2. Reassure casualty in a caring and calm manner and make them comfortable 2.3. Use First Aid ***resources and equipment*** appropriate to the identified risks and hazard controls 2.4. Seek First Aid or appropriate medical assistance from appropriate personnel using relevant ***communication media and equipment***, to site requirements 2.5. Monitor and respond to ***casualty's condition*** in accordance with effective ***First Aid principles*** and site procedures 2.6. Finalise casualty management according to casualty's needs and First Aid principles
3. Record and report incident	3.1. Accurately record details of casualty's physical condition, changes in conditions, management and response to management in line with organisational procedures 3.2. Accurately convey details of casualty's condition and management activities to emergency services/relieving personnel 3.3. Prepare reports to supervisors in a timely manner, presenting all relevant facts according to established site procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply initial response First Aid:

- access, interpret and apply relevant safety rules and procedures
- prepare and process reports
- show assertiveness
- communicate effectively
- make decisions
- apply infection control measures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply initial response First Aid:

- initial response First Aid
- manual handling procedures
- incident reporting systems and procedures
- basic anatomy and physiology
- dealing with confidentiality
- knowledge of the First Aiders' skills and limitations
- OHS legislation and regulations
- how to gain access to and interpret materials safety data sheets (MSDS)
- basic anatomy and physiology
- duty of care
- resuscitation
- bleeding control
- care of unconscious
- legal requirements
- airway management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application of initial response First Aid • implementation of requirements, procedures and techniques for the safe, effective and efficient application of initial response First Aid • working with others to undertake and complete the initial response First Aid that meets all of the required outcomes • consistent timely application of initial response First Aid that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete initial response First Aid

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Physical hazards may include:	• workplace hazards • environmental hazards • proximity of other people • hazards associated with the casualty management processes
Risks may include:	• worksite equipment, machinery and substances • environmental risks • bodily fluids • risk of further injury to the casualty • risks associated with the proximity of other workers and bystanders
Vital signs may include:	• breathing • circulation • consciousness
First Aid management may need to account for:	• workplace policies and procedures • industry/site specific regulations, codes etc. • OHS requirements • state and territory workplace health and safety requirements • allergies the casualty may have • location and nature of the workplace • environmental conditions such as: electricity, biological risks, weather, motor vehicle accidents • location of emergency services personnel • use and availability of First Ad equipment and resources • infection control
Initial response **First Aid** may include:	• cardio-pulmonary resuscitation • expired air resuscitation • bleeding control • basic patient management • spinal injury awareness • immediate burns treatment

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	• unconscious casualty procedure • identification of fractures • sprains • strains • the treatment of shock
Resources and equipment may include:	• pressure bandages • thermometers • First Aid kit • eyewash • thermal blankets • pocket face masks • rubber gloves • dressing • spacer device • cervical collars
Communication media and equipment may include:	• mobile phone • UHF/VHF radio • flags • flares • 2-way radio • email • electronic equipment
Casualty's condition may include:	• abdominal injuries • allergic reactions • bleeding • burns - thermal, chemical, friction, electrical • cardiac conditions • chemical contamination • cold injuries • crush injuries • dislocations • drowning • envenom - snake, spider, insect and marine bites • environmental conditions such as hypothermia, dehydration, heat stroke • eye injuries • fractures • head injuries • minor skin injuries • neck and spinal injuries • needle-stick injuries

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	• poisoning and toxic substances • asthma and/or choking • shock • smoke inhalation • soft tissue injuries, including sprains, strains, dislocations • substance abuse, including drugs • unconsciousness, including not breathing and no pulse
Established **First Aid principles** may include:	• checking the site for danger to self, casualty and others and minimising the danger • checking and maintaining the casualty's airway, breathing and circulation

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR301A Respond to mine incident

Modification History

Not applicable.

Unit Descriptor

This unit covers responding to incidents in the metalliferous mines. It includes: evaluating readiness for incident response; responding to incidents; and preparing for mine entry.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate readiness for incident response	1.1. Access, interpret and apply ***compliance documentation*** relevant to responding to incident in metalliferous mines 1.2. Identify, obtain and test emergency ***equipment*** 1.3. Evaluate personal fitness for operation 1.4. Maintain individual competencies, medical standards and fitness levels in accordance with mine and statutory ***medical standards*** and fitness standards
2. Respond to incident	2.1. Assemble at designated assembly point in accordance with standard operating procedures and guidelines 2.2. Report to appropriate official or ***Incident Control*** and receive briefing on incident and mine conditions 2.3. Confirm the location, nature and personnel involved in the incident and ***record*** on mine plan 2.4. Identify and access standard ***rescue*** operation equipment 2.5. Access any identified necessary additional equipment required for the rescue operation
3. Prepare for mine entry	3.1. Establish safest route to be taken from current mine plans and verify with Team Leader 3.2. Evaluate mine ***atmosphere*** to determine location and establish incident control point(s) 3.3. Establish ***communications*** systems and brief team members on communication protocols 3.4. Constitute ***team*** with numbers between the maximum and minimum specified in rescue guidelines, and allocate ***team roles*** 3.5. Ensure that any required ***stand-by team*** is available 3.6. Receive and verify pre-operational briefing from Team Leader 3.7. Identify recommended routes from the

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	mine plan 3.8. Select appropriate gas measurement instruments and equipment and make pre-operational tests and inspections 3.9. Identify, check and test minimum and additional mines rescue equipment for the tasks 3.10. Commence operations from established incident control point(s)

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to respond to incident in metalliferous mines:

- apply legislative, organisation and site requirements and procedures
- operate gas testing and monitoring instruments
- interpret mine gas testing instruments
- wear and use escape apparatus
- operate in breathing apparatus
- select extrication methods and operate extrication equipment
- take and analyse gas samples
- use communications and signals
- read and interpret mine plan symbols
- work as a team member
- assess a situation and make effective, safe decisions
- plan and apply contingency plans
- read mine plans and orientate in the mine
- carry out risk assessments
- select and use appropriate PPE
- take air measurement and ventilation readings
- take temperature and relative humidity measurements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to respond to incident in metalliferous mines:

- rescue guidelines
- call-out procedures
- rescue team structure, roles and responsibilities
- mining environment
- types and effects of mine gases
- entrapment procedures
- gas testing and monitoring instruments - types, limitations, function and operation
- operation and limitations of breathing apparatus
- air measurement and ventilation systems
- effects on people working in hot and humid atmospheres

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- minimum equipment requirements for rescue operations
- requirements for personal readiness
- rescue team call-out procedures and equipment
- specialised rescue equipment
- standby/emergency procedures for incident control
- ground support types and construction

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for responding to incident in metalliferous mines • implementation of requirements, procedures and techniques for the safe, effective and efficient response to incident in metalliferous mines • working with others to respond to incident in metalliferous mines that meets all of the required outcomes • consistent timely response to incident in metalliferous mines that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to respond to incident in metalliferous mines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Incident Control:	• has overall planning, approval and control of an incident and may include ***fresh air base*** which may be defined as a continuously monitored station for dispatch or return of rescue teams in close proximity to irrespirable zones in known fresh air
Records are permanent records which may be in the following formats:	• written • photographic • electronic
Mines **rescue** procedures may include:	• active team procedures • exploration • search and rescue • fire fighting • life support • transport • recovery • restoration • ventilation • re-opening
Atmospheric testing may include:	• hand-held instruments • tube detectors • telemetric remote sampling • chromatography
Communications may include:	• telephones • radios

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	• runners • 2- way radio • computer
Teams can comprise two or more members, depending on such factors as:	• respiratory protection • distance • communications
Team roles may include:	• rescue team leader • deputy leader • rescue team members
Stand-by team can be defined as:	• a fully equipped team in readiness to assist the active team
Medical fitness is that determined by a medical practitioner, on behalf of the mine manager, to certify fitness for rescue operations	

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR302A Respond to local emergencies and incidents

Modification History

Not applicable.

Unit Descriptor

This unit covers the response to local emergencies and incidents in resources and infrastructure industries. It includes preparing for emergency procedures, responding to emergency or incident situations.

Application of the Unit

This unit is appropriate for those working in operational, service and maintenance roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for emergency procedures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the response to local emergencies and incidents 1.2. Locate and maintain ***emergency equipment*** in accordance with statutory requirements, site procedures and manufacturer's specifications 1.3. Identify and confirm nature, scope and location of the ***emergency or incident*** 1.4. Assess emergency or incident and determine appropriate course of action in keeping with requirements for personal safety 1.5. Notify emergency or incident in accordance with authorised procedures and methods of communication
2. Respond to emergency or incident situations	2.1. Follow emergency evacuation procedures where appropriate and in accordance with site procedures 2.2. Coordinate and control response to emergency or incident to ensure continuing safety of personnel at the site 2.3. Isolate potential sources of danger and put in place warning signs/ signals/ barriers 2.4. Select emergency equipment and use appropriately to deal with the emergency 2.5. Take local measures to reduce impact of emergency or incident 2.6. Continually monitor and assess emergency situation and changes in circumstances, communicate requests for further assistance or evacuation to appropriate officials 2.7. Exercise control of the emergency or incident situation until formal relief is notified/ received

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to respond to local emergencies and incidents:

- apply legislative, organisation and site requirements and procedures
- apply hazard and potential hazard identification procedures
- observe, analyse and report emergencies/incidents
- read and interpret site plans
- apply initial response first aid
- apply fire fighting techniques
- apply communication procedures
- read, interpret and apply relevant geological and survey data

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to respond to local emergencies and incidents:

- statutory requirements
- site emergency procedures
- site incident procedures
- initial response First Aid
- breathing apparatus
- fire fighting
- hazards and potential hazards
- relevant geological and survey data
- relevant ventilation information
- site plans
- site communication systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for responding to local emergencies and incidents • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the response to local emergencies and incidents • working with others to undertake and complete the response to local emergencies and incidents that meets all of the required outcomes • consistent timely completion of the response to local emergencies and incidents that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the response to local emergencies and incidents

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Emergency equipment or materials may include:	• roof support materials • fire fighting equipment • pumping equipment • relevant plant and equipment • First Aid equipment • communication systems • self rescuers (conversion/filter units or oxygen generation) • self contained breathing apparatus • respiratory protection • lifting and cutting equipment • rescue/recovery equipment • emergency bunds • absorption materials • spill response kits • personal protective equipment • chemical safety systems
Local operational **emergencies or incidents** may include:	• falls • explosion/ignition • inundation • power failure • fires • vehicle/equipment accidents • industrial gas leakages
Local personnel related	• injuries

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emergencies or incidents may include:	• critical response First Aid • evacuation • entrapment • rescue
Local **environmental incidents** may include:	• fires • chemical spills • overtopping of dams • spillage of oils, fuels, water • coal spillage • dust outside normal limits

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR303A Operate in self-contained regenerative oxygen breathing apparatus

Modification History

Not applicable.

Unit Descriptor

This unit covers operating in self-contained regenerative oxygen breathing apparatus in the metalliferous mining industry. It includes: preparing for operation, operating in irrespirable atmosphere and carrying out post-operation activities.

Application of the Unit

This unit is appropriate for those working in operational roles, in underground mines within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to operating in ***self-contained regenerative oxygen breathing apparatus*** 1.2. Ensure fitness levels are suitable to operate breathing apparatus 1.3. Carry out ***pre-operational equipment tests*** 1.4. Record test outcomes 1.5. Inspect apparatus for damage and missing components and readiness for operation before entering mine 1.6. Don and adjust self-contained regenerative oxygen breathing apparatus for comfort and correct operation 1.7. Select additional personal protective equipment appropriate for work activities
2. Operate in irrespirable atmosphere	2.1. Navigate in breathing apparatus in adverse underground conditions, including ***irrespirable atmosphere*** 2.2. Identify, monitor and control ***hazards*** 2.3. Establish and maintain ***communication*** with team members and leader throughout the activity 2.4. Apply breathing apparatus techniques and procedures by undertaking activities as a member of a team 2.5. Monitor the operation of the breathing apparatus and the ***condition of the wearer*** 2.6. Operate in breathing apparatus in ***emergency situations*** 2.7. Follow ***entrapment procedures*** 2.8. Maintain personal safety at all times
3. Carry out post-operation activities	3.1. Close down self-contained regenerative oxygen breathing apparatus 3.2. Remove self-contained regenerative oxygen breathing apparatus 3.3. Report operational activities to appropriate personnel 3.4. Strip, clean, service, check, reassemble and test breathing apparatus in accordance with

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	procedures, specification and the code of practice on transmittable diseases 3.5. Store equipment ready for operational use

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to operate in self-contained regenerative oxygen breathing apparatus:

- apply legislative, organisation and site requirements and procedures
- select and use appropriate PPE
- apply pre operational checks and testing of equipment
- apply procedures for operating in escape apparatus
- work as a team member
- read mine plans and symbols and orientate in the mine
- use communications and signals
- identify adverse conditions
- interpret monitoring device readings
- apply basic life support
- interpret manufacturer's specifications
- apply equipment stripping and reassembly requirements and procedures
- apply equipment cleaning, servicing and testing requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to operate in self-contained regenerative oxygen breathing apparatus:

- respiratory system, effects of irrespirable atmospheres on the body
- protective equipment
- characteristics, component parts, operation of self-contained regenerative oxygen breathing apparatus
- testing parameters and methods
- operational testing
- standard operating procedures
- safe work practices when wearing breathing apparatus
- operating breathing apparatus
- use of distress signals
- communication methods and protocols
- use of the breathing apparatus control equipment
- self-contained regenerative oxygen breathing apparatus cleaning and hygiene requirements

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- operating limits/entrapment procedure

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating in self-contained regenerative oxygen breathing apparatus • implementation of requirements, procedures and techniques for safe, effective and efficient operating in self-contained regenerative oxygen breathing apparatus • working with others while using self-contained regenerative oxygen breathing apparatus that meets all of the required outcomes • consistent timely operating in self-contained regenerative oxygen breathing apparatus that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others while using self-contained regenerative oxygen breathing apparatus

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Self-contained regenerative oxygen breathing apparatus may be defined as:	• "an apparatus which is worn by the wearer which contains all the functions to allow breathing in a hostile atmosphere without any connection to normal atmospheric conditions, and where the exhaled atmosphere is cleansed of carbon dioxide and the remaining oxygen can be re-used"
Pre-operational equipment tests may include:	• visual inspection • exhalation and inhalation valve operation • positive and negative pressure leak tests • pre-flushing • cylinder contents • pressure relief valve • dosage • high pressure leaks • lung demand valve opening pressure • pressure gauge zero test
Irrespirable Atmosphere is considered an atmosphere which is unsafe for a person to breathe as a result of either oxygen depletion or the presence of:	• toxic fumes • gases • contaminants • smoke or suspended particles • heated atmospheres
Hazards may include:	• fire • explosion • failure to maintain a face seal • exhaustion of oxygen supply

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	• malfunction of equipment • disorientation in smoke/darkness or confinement • structural hazards and/or hazardous materials • entrapment
Communications may include:	• distress signals • portable radio • communications equipment • signal lines • hand signals • telephone • mobile phone
Condition of wearer may include:	• economic breathing techniques • oxygen capacity and temperature • wearer stress
Emergency Situations may include:	• high pressure oxygen leak • collapsed team member • entrapment • low pressure oxygen leak • high pressure leak • evacuation
Entrapment procedures may include:	• ceasing all strenuous activity • activating distress signals • relocating to safest available place • calling for assistance

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR304A Control emergencies and critical situations

Modification History

Not applicable.

Unit Descriptor

This unit covers controlling emergencies and critical situations in the oil and gas drilling industry. It includes: planning and preparing for operations; controlling critical situations; and coordinating the response to emergencies.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites, within:

- Oil and Gas Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to controlling emergencies and critical situations 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential hazards 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Control critical situations	2.1. Identify developing, emerging and existing critical situations and take actions appropriate to the situation 2.2. Activate relevant alarms 2.3. Take actions to control and alleviate the situation 2.4. Recognise symptoms/effects of contaminants, toxic materials and heat stress and take appropriate action 2.5. Monitor the situation and take relevant actions to minimise risks to personnel, environment, process, plant and equipment 2.6. Maintain reporting requirements in the event of a critical situation
3. Coordinate the response to emergencies	3.1. Identify developing, emerging and existing critical situations and take actions appropriate to the situation 3.2. Activate relevant alarms 3.3. Give information and instructions clearly, accurately and in a suitable format for the needs of relevant personnel 3.4. Clarify and act upon advice received as appropriate to the situation 3.5. Adhere to agreed emergency procedures 3.6. Record information on relevant documentation accurately, completely and legibly 3.7. Take immediate action to make the situation safe and minimise risks to personnel, environment, process, plant and

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	equipment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to control emergencies and critical situations:

- apply legislative, organisation and site requirements and procedures
- implement personal protection requirements appropriate to the environment
- recognise effects of changes of ambient conditions on operations
- locate sources of information and interpret drawings and manuals
- operate equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to control emergencies and critical situations:

- occupational health and safety obligations
- company and statutory guidelines, procedures and practices
- emergency procedures
- evacuation procedures and personnel responsibilities
- fire and gas control system
- alarm system
- emergency shutdown control system
- effects of loss of any system upon the operation
- functioning of process control, including instrumentation
- equipment layout and its connection with other systems
- consequences of emissions to the environment
- operating parameters and tolerances
- rig maintenance
- normal drilling operations
- non-routine drilling operations
- man management/rig management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for controlling emergencies and critical situations • implementation of requirements, procedures and techniques for the safe, effective and efficient control of emergencies and critical situations • working with others to respond to emergencies and critical situations that meet all of the required outcomes • consistent timely controlling of emergencies and critical situations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to respond to emergencies and critical situations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from briefings, toolbox meetings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• potential hazards
	• personal protective equipment requirements
	• consideration of h_2s and other toxic substances
	• communication requirements
	• Job Safety Analysis (JSA)
	• emergency and critical situation response procedures
	• agreed procedures may include:
	  • company
	  • facility
	  • client

Reports may include:	• hazard observation reports • rig safety audits
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site emergency response personnel
Critical situation may include:	• operational difficulties • extreme weather • equipment failure • leaks • fires • kicks
Alarms may include:	• audible • warning gestures

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	• oral warnings • fixed system specific to installation
Actions to control and alleviate critical situations may include:	• make safe • isolate • shutdown • evacuate work area • report • record • contain • rectify
Reporting requirements may include:	• oral • written
Immediate actions may include:	• inform external services • do nothing • activate internal emergency response teams • inform duty personnel • inform adjacent facilities • activate ESD • account for people • evacuate • assist in rescue of personnel

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR305A Control underground fires

Modification History

Not applicable.

Unit Descriptor

This unit covers controlling fires in underground metalliferous mines. It includes: assessing the situation and preparing for fire control operations; controlling the fire; and restoring and refurbishing fire equipment to operational condition.

Application of the Unit

This unit is appropriate for those working in a operational roles, underground mines within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess situation and prepare for fire control operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to controlling fires in underground metalliferous mines 1.2. Interpret data and reports to determine cause and location of ***fire*** and record on the mine plan 1.3. Assess type, size and spread of fire to determine risk to people and plant/machinery 1.4. Identify and assess ***potential ignition sources*** for further fires to determine control measures, and record on the mine plan 1.5. Assess ***secondary risks*** and recommend actions to control these risks and protect people 1.6. Assess ***fire-fighting*** personnel's exposure to fire, and identify methods and equipment to control these identified risks 1.7. Determine personnel numbers, equipment and ***personal protective equipment*** requirements for fire control operations 1.8. Determine fire-fighting strategy and procedures to best control the situation 1.9. Assess ***fire control equipment*** and ***fire fighting media*** capability and quantity and make decisions about the most appropriate course of action 1.10. Assign duties to personnel available to control the fire 1.11. Identify and apply ventilation monitoring and control measures 1.12. Assess need for evacuation of personnel and take appropriate action 1.13. Prepare ***action plan*** for fire control operations
2. Control the fire	2.1. Secure fire area/zone to prevent entry of non-involved personnel 2.2. Access, assemble and test equipment determined in the action plan to manufacturer's instructions and

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	recommended/site practices and safety parameters 2.3. Employ fire-fighting techniques and methods determined in the action plan, within given personnel competence and availability and equipment constraints to standard operating procedures 2.4. Maintain ***communication*** with other fire-fighters and ***Incident Control*** on condition of fire and status of fire control operations 2.5. Continuously monitor fire and put controls in place to ensure the safety of personnel in the vicinity of the fire 2.6. Continuously reassess and apply ventilation control measures to operations 2.7. Continuously monitor fire and fire-fighting activities to determine ability to continue to handle the situation, and take action 2.8. Minimise damage and disruption to mine working during the fire control operation, consistent with safety requirements 2.9. Assess fire intensity and magnitude and withdraw from fire zone and relocate fire control equipment to a safe place if fire is uncontrollable 2.10. Bring fire safely under control and extinguish 2.11. Monitor fire site and take actions to prevent possible re-ignition according to site-recommended procedures 2.12. Report to Incident Control according to site-recommended procedures 2.13. Monitor for ***structural*** and ground support ***integrity***
3. Restore and refurbish fire equipment to operational condition	3.1. Inspect equipment for any damage sustained in fire control operations 3.2. Repair, replenish or replace defective/depleted equipment to meet manufacturer's specifications and/or Australian standards 3.3. Tag and quarantine unusable equipment 3.4. Return fire control system and equipment to ***operational readiness***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to control fires in underground metalliferous mines:

- apply legislative, organisation and site requirements and procedures
- locate fire fighting equipment on mine sites
- interpret emergency preparedness plans
- navigate in underground mines
- read maps and interpret symbols
- apply fires call-outs response procedures
- work as a member of a team
- handle and control hazardous substances in a fire situation
- locate plant and fire suppression systems on a mine layout plan
- locate and operate fixed and portable fire suppression equipment
- locate and demonstration the correct use of ladders and other approved devices
- select appropriate extinguishing media for fire control and extinguishment
- operate emergency communications systems
- carry out effective fire-ground management procedures
- utilise and troubleshoot water supply systems and identify alternative systems
- interpret and use signals
- access, interpret and apply technical and safety information
- apply diagnostic/faultfinding techniques
- comply with environmental requirements
- apply isolation procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to control fires in underground metalliferous mines:

- the location of fire fighting equipment on mine sites
- interpretation of emergency preparedness plans
- response to call-outs to fires
- types of fire and associated risks and control measures
- mine plant and fire suppression systems
- ventilation management during fire situations
- operation of fixed and portable fire suppression equipment

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- the correct use of ladders and other devices
- interpretation of Hazchem labels and signs
- hazard/risk management principles and practices (including assessment and control)
- the hazards associated with hazardous chemicals and how to handle them in a fire situation
- identification, selection and operation of appropriate equipment
- identification and application of appropriate personal safety equipment
- identification of the properties of extinguishing media and the selection of those appropriate to the situation
- communications systems' types and protocols
- fire-ground management procedures
- utilisation and troubleshooting of water supply systems and identification of alternative systems
- interpretation and use of signals
- refurbishment of fire-fighting equipment and systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for controlling fires in underground metalliferous mines • implementation of requirements, procedures and techniques for the safe, effective and efficient controlling of fires in underground metalliferous mines • working with others to control fires in underground metalliferous mines that meet all of the required outcomes • consistent timely controlling of fires in underground metalliferous mines that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to control fires in underground metalliferous mines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Fires may include:	• A, B, C, D, F class fires and E rated fires (International Standard-check name) • accessible • inaccessible • uncontrolled fires • mobile plant • structural fires
Potential ignition sources may include but limited to:	• ignition sources associated with friction eg belt conveyors • ignition sources associated with fuel and oil storage/service bays • ignition sources associated with electricity eg battery charging stations, shorting of cables • frictional ignition sources at the mining face eg explosives, gases • static electricity as an ignition source • ignition sources associated with the combustion of synthetic materials • hot materials/surfaces
Secondary risks may include:	• environmental • electrical • smoke • toxic gases • loss of visibility • volatile substances (oxidising agents) • heat illness

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	• secondary explosions • burns • spillage • structural collapse
Fire-fighting is limited to:	• fires within the capability of the rescue team members
Personal protective equipment may include:	• industrial clothing • thermal suits • face shields • eye protection • respiratory protection • safety footwear • head protection • hand protection
Fire control equipment may include:	• fire hoses and fittings • extinguishers • mine water supply systems • hydrants • foam generators • water turbine • vehicles • fixed and mobile fire suppression plant • ladders
Fire fighting media may include:	• water • low expansion foam • high expansion foam • dry chemical powder • Carbon Dioxide • vaporising liquid • alcohol rated foam • dry agents
Action plans may include:	• RECEO VS - (rescue exposures control/contain extinguish overhaul - ventilate and salvage) International Response • fire control equipment requirements • fire fighting capability • personnel numbers and experience • duties assigned to fire control and support personnel • fire fighting strategy and procedures • PPE requirements • communications methods and protocols

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	• risk assessment requirements • ventilation management • emergency and First Aid procedures • contingency plans
Communications may include:	• reports • 2- way radio • telephone • mobile phone • hand signals • runners • light signals
Incident Control has:	• overall planning, approval and control of an incident
Structural integrity may include:	• stability of walls and backs in underground • stability of major structures on surface
Returning equipment to **operational readiness** may include:	• inspection • cleaning • repair • replacement • re-fill

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR306A Conduct underground search

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting searches in underground metalliferous mines. It includes: planning for the search; conducting the search; managing unplanned events or changed in circumstances; and finalise search.

Application of the Unit

This unit is appropriate for those working in operational roles, in underground mines, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan underground search	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting searches in underground metalliferous mines 1.2. Receive and analyse information and clarify ***factors to be considered*** in the search plan 1.3. Identify, liaise and clarify roles with relevant ***external agencies*** which may be called upon to assist with the search 1.4. Develop a workable search plan and contingency plans in consultation with external agencies and mine operational personnel 1.5. Identify and access ***equipment*** required for the search operation 1.6. Select personal protective equipment appropriate for search activities 1.7. Document search strategy and plot search patterns and routes on mine plan
2. Conduct search	2.1. Define possible and probable search areas based on mine configuration and personal/work factors 2.2. Conduct risk assessment to identify the risks to the search party, and identify the necessary controls according to site procedures and legislative requirements 2.3. Make sure search period/area does not exceed air/oxygen working duration and search personnel fitness 2.4. Establish and maintain ***communications*** procedures and protocols 2.5. Conduct search methodically using appropriate, recommended pattern and ***techniques*** 2.6. Manoeuvre hostile ground using standard equipment, techniques and procedures 2.7. Maintain ***physical contact*** with other search team members at all times during the search 2.8. ***Mark route*** to allow safe egress from mine

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	or allow location of search team by back-up team if necessary
3. Manage unplanned event or change in circumstances	3.1. Evaluate the ***unplanned event and changes in circumstances*** 3.2. Identify, implement and monitor procedures to deal with the event 3.3. Communicate details of the event or changes in circumstances to ***Incident Control*** for advice on actions to be taken 3.4. Communicate requests for further assistance or advice of withdrawal
4. Finalise search	4.1. Negotiate the ***conclusion of the search*** in consultation with external agencies and mine operational personnel 4.2. Collect and preserve all relevant information 4.3. Debrief with relevant personnel 4.4. Complete all required reports 4.5. Review search operation and recommend improvements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct searches in underground metalliferous mines:

- apply legislative, organisation and site requirements and procedures
- apply flexibility to change plans
- apply adaptability and resourcefulness
- apply problem solving and planning to organise an immediate response
- apply questioning to determine accurate details concerning the situation
- apply decision making to determine the best course of action
- apply observations skills
- navigate in underground mines
- read maps and interpret symbols
- apply call-outs response procedures
- work as a member of a team

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct searches in underground metalliferous mines:

- search procedures and techniques
- local communication systems
- roles of external agencies
- local hazards and environmental threats
- operation of communication systems
- legal requirements in the event of a death or accident
- search equipment
- navigating in underground mines
- breathing apparatus

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting searches in underground metalliferous mines • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of searches in underground metalliferous mines • working with others to conduct searches in underground metalliferous mines that meets all of the required outcomes • consistent timely conducting of searches in underground metalliferous mines that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency.
	The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to conduct searches in underground metalliferous mines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Factors to be considered may include:	• timeframe for survival of search object • other time factors • ground/structural conditions • human resources • communications • capacity of the missing person/party • place and time last seen • size of search area • availability of food and water • availability of shelter • availability of respirable air
External agencies may include:	• police search and rescue service • State Emergency Service • Ambulance service • mine rescue services (mutual aid agreements/arrangements) • Critical Incident Stress Debriefing (CISD) agencies • fire and rescue services • counselling agencies
Equipment may include:	• communication systems and equipment • respiratory protection for team and casualty • First Aid equipment • casualty/equipment transport (stokes litter) • site/area map

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	• telephone contact details • gas detection equipment • self rescuer • rope bag and contents • scaling bars • portable lights • PPE • guide lines • tag lines • vehicles • ropes • lights • breathing apparatus • search kits
Communications may include:	• 2-way radio • telephone • mobile phone • hand signals • runners • light signals
Search **techniques** may include:	• line of sight • systematic coverage of area radiating from last point of contact of search object • link lines/guide lines • walking/crawling • sweep • grid patterns • feelings
Physical contact may include:	• personal contact • link line/guide line • visual • radio communication
Route marking may include:	• chemical light sticks • wall markings • barricades • luminous tape/guide lines or hoses
Unplanned event or change in circumstances may include:	• route impassable • collapsed team member • unacceptable environment changes • communications failure • search team member equipment failure

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	• directed withdrawal • team time expiry • team lost, withdrawal • notification to team from incident control
Incident Control:	• has control and makes decisions on the operations associated with dealing with the incident • could be located at a ***fresh air base*** which can be defined as a continuously monitored station for dispatch or return of teams in close proximity to active zones in known fresh air
Conclusion of search may include:	• object of search found • recommendation that search be called off • further search

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR307A Extricate casualties from underground incident

Modification History

Not applicable.

Unit Descriptor

This unit covers extricating casualties from underground incident in metalliferous mines. It includes: preparing for extrication; establishing the extrication system; stabilising the casualty; transporting the casualty to a place of safety; and restoring and refurbishing equipment.

Application of the Unit

This unit is appropriate for those working in operational roles, in underground mines within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for extrication of casualties	1.1. Access, interpret and apply ***compliance documentation*** relevant to extricating casualties from underground incident in metalliferous mines 1.2. Interpret ***incident*** information to determine location, type of incident and personnel involved and record on the mine plan 1.3. Fit appropriate ***safety equipment*** and navigate to incident site according to site and standard operating procedures 1.4. Identify, address and report potential ***hazards***, and risks to rescue team members and entrapped personnel 1.5. Assess the possible type and extent of injuries to entrapped personnel 1.6. Assess the incident and determine the appropriate method of extricating casualties 1.7. Determine extrication procedures and strategy and develop an ***action plan*** for extrication operations
2. Establish extrication system and extricate casualty	2.1. Identify and obtain required ***extrication equipment*** and check for operational ability 2.2. Set up equipment to extricate casualty according to manufacturer's specifications and site and safe operating procedures 2.3. Test the extrication system and equipment to manufacturer's specifications and safe operating procedures before extrication operations are undertaken 2.4. Employ equipment and techniques to extricate people according to manufacturer's specifications and site and safe operating procedures 2.5. Maintain ***communication*** with other team members and ***Incident Control*** on condition of casualties and status of extrication operations
3. Stabilise casualty	3.1. Perform Primary and Secondary assessments to check casualty's condition to recognised life support guidelines 3.2. Apply identified life support requirements

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	3.3. Continuously monitor casualty and record vital signs 3.4. Communicate casualty information to Incident Control and/or ***medical personnel***
4. Transport casualty to a place of safety	4.1. Evaluate the need for, and equip casualties with escape apparatus 4.2. Assess the availability and adequacy of transport resources and obtain additional assistance and resources where required 4.3. Prepare stretcher patients and other casualties for safe transport to a place of safety according to site and safe operating procedures 4.4. Monitor casualties and check vital signs during transport 4.5. Employ techniques and procedures to transport casualties to a place of safety according to site and safe operating procedures 4.6. Ensure that casualties are handed over to medical professionals 4.7. Communicate status of incident site, casualties, personnel and equipment to Incident Control
5. Restore and refurbish equipment	5.1. Inspect all equipment used for any damage sustained in the extrication operation 5.2. Repair or replace defective equipment to meet manufacturer's specifications or Australian standards 5.3. Tag and quarantine unusable equipment 5.4. ***Return*** the rescue system and ***equipment to operational readiness*** according to manufacturer's specifications and/or Australian standards

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required extricate casualties from underground incident in metalliferous mines:

- apply legislative, organisation and site requirements and procedures
- locate extrication equipment on mine site
- navigate in underground mines
- read maps and interpret symbols
- apply call-out response procedures
- work as a member of a team
- locate and demonstrate the correct use of ladders and other devices
- operate emergency communications systems
- interpret and use signals
- access, interpret and apply technical and safety information
- apply diagnostic/faultfinding techniques
- apply environmental compliance requirements
- apply isolation procedures
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to extricate casualties from underground incident in metalliferous mines:

- extrication equipment - types, construction and operation
- manufacturer's recommendations for safe use and care of extrication equipment
- basic life support
- primary assessment/secondary assessment
- hazard/risk management principles and practices (including assessment and control)
- types and availability of transport resources
- types and availability of medical facilities
- lashing techniques for stretchers
- systems and methods of extrication
- location of extrication equipment
- inspection and refurbishment of extrication equipment
- hazards of underground mine operations

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- hazards associated with large mobile mine equipment
- mine traffic procedures and rules
- communication systems and protocols
- infectious disease and waste management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for extricating casualties from underground incident in metalliferous mines • implementation of requirements, procedures and techniques for the safe, effective and efficient extricating of casualties from underground incident in metalliferous mines • working with others to extricate casualties from underground incident in metalliferous mines that meets all of the required outcomes • consistent timely extrication of casualties from underground incident in metalliferous mines that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to extricate casualties from underground incident in metalliferous mines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Incidents may include those associated with:	• heights • depths • plant and equipment entrapment • light vehicles • heavy vehicles • mining equipment • transport equipment • shafts and winders • toxic environment
Safety equipment may include:	• breathing apparatus • industrial clothing • thermal suits • face shields • eye protection • respiratory protection • safety footwear
Hazards may include:	• environmental • electrical • smoke • chemicals • toxic atmosphere/gases • loss of visibility • volatile substances • heat • heights/depths

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	• ground/wall collapse • unstable ground • engulfment • bulk fuel storage • fuel transportation • unsafe working practices • explosives
Action plans may include:	• extrication equipment requirements • personnel capability and numbers • duties assigned to extrication and support personnel • extrication strategy and procedures • safety equipment requirements • communications methods and protocols • risk assessment requirements • emergency procedures • life support arrangements • transport • contingency plans
Extrication equipment may include:	• hydraulic rescue equipment • pneumatic lifting equipment • crowbars • hand tools • hacksaws • abrasive saws • cutting equipment • Tirfor • oxygen therapy/resuscitation equipment • rescue boards • First Aid equipment • roping equipment • ladders
Communications may include:	• reports • 2-way radio • telephone • mobile phone • hand signals • runners • light signals
Incident Control:	• has overall planning, approval and control of an incident

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Medical personnel may include:	• doctors • ambulance officers • paramedics • site medical officer • Royal Flying Doctor Service
Returning equipment to operational readiness may include:	• inspection • cleaning • repair • replacement/re-fill

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR308A Extricate and transport people involved in incidents

Modification History

Not applicable.

Unit Descriptor

This unit covers the extraction and transporting of people involved in incidents in surface mining and extractive industries. It includes: selection of the extraction method, accessing and cooperating with emergency services, establishing the extrication system, extricating casualties, re-assess the condition of and stabilising of casualty, transport of casualties to appropriate facilities, handing over casualties to emergency services, and restoring and refurbishing equipment to operational condition.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select extrication method	1.1. Access, interpret and apply ***compliance documentation*** relevant to extricate and transport people involved in incidents in ***surface operations*** 1.2. Assess ***situation*** to determine the appropriate method and procedures of extrication with due recognition of ***hazards*** and the entrapped person
2. Access and cooperate with emergency services	2.1. Assess the incident to determine the ***emergency service*** type to be called in 2.2. Contact emergency services and call in to mine emergency protocols 2.3. Establish the roles and responsibilities of the emergency service and ***communicate*** to rescue team members 2.4. Establish the roles and responsibilities of rescue team members in relation to emergency service people and communicate to both parties
3. Establish extrication system	3.1. Identify and obtain appropriate ***equipment*** and check for operational ability 3.2. Set up equipment to extricate casualty according to manufacturer recommendations and within the guidelines of Accredited Rescue Services 3.3. Test the extrication system within the guidelines of accredited rescue services before any casualty is lifted or lowered
4. Extricate casualty	4.1. Select and use equipment and techniques according to manufacturer recommendations to extricate people within the guidelines of Accredited Rescue Services
5. Re-assess condition of casualty and stabilise	5.1. Perform primary and secondary assessments to Mines Rescue Advisory Standard to check casualty's condition 5.2. Apply the identified life support requirements 5.3. Continuously monitor casualty and record vital signs

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	5.4. Communicate all relevant information
6. Transport casualty to appropriate facility	6.1. Assess ***transport*** resources and obtain additional assistance if required 6.2. Prepare stretcher patients for safe transport 6.3. Employ recommended techniques and procedures to Mines Rescue Advisory Standard to transport casualty to medical facility 6.4. Communicate incident site status of personnel and equipment to incident controller
7. Hand over to emergency services	7.1. Hand over casualty/s to relevant emergency service's personnel 7.2. Hand over record of casualty/s vital signs 7.3. Assist relevant emergency service with life support if requested
8. Restore and refurbish equipment to operational condition	8.1. Inspect all equipment used for any damage or contamination sustained in the extrication 8.2. Dispose of contaminated medical waste as per Australian standards 8.3. Repair or replace all defective equipment to meet manufacturer specification or Australian standards 8.4. Clean and sterilise equipment to meet manufacturer specifications or Australian standards 8.5. Tag and quarantine unusable equipment 8.6. Return the rescue equipment to operational readiness

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to extricate and transport people involved in incidents:

- apply legislative, organisation and site requirements and procedures
- identify extrication equipment to suit situation and check for operational readiness
- assess and control hazards and associated risks
- apply basic life support to casualties
- apply primary assessment to casualties
- apply secondary assessment to casualties
- locate and obtain transport resources
- apply stretcher lashing techniques
- apply procedures for the safe operation of extrication equipment
- apply systems and methods of extrication
- locate extrication equipment
- operate communication systems and observe communication protocols
- operate radios during the extrication operation
- apply procedures for gaining access to and liaising with support services and mine officials
- apply procedures for refurbishing and quarantining extrication equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to extricate and transport people involved in incidents:

- extrication equipment - types, construction and operation
- manufacturer recommendations for safe use and care of extrication equipment
- Accredited Rescue Service guidelines for the operation and care of extrication equipment
- basic life support
- primary assessment procedures
- secondary assessment procedures
- cross-infection precautions
- hazard / risk management principles and practices, including assessment and control
- types and availability of transport resources

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- types and availability of medical facilities
- lashing techniques for stretchers
- safe operation of extrication equipment
- systems and methods of extrication
- location of extrication equipment
- inspection and refurbishment of extrication equipment
- structural design of mine plant and equipment
- blasting sequences
- hazards of open-cut operations
- hazards associated with large mobile mine equipment
- mine traffic procedures and rules
- accident investigation techniques and legislation
- liaison protocols with support services
- communication systems and protocols
- radio systems and operations
- types, role and responsibilities of emergency services and mine officials

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for extricating and transporting people involved in incidents in surface operations • implementation of requirements, procedures and techniques for the safe, effective and efficient extricating and transporting people involved in incidents in surface operations • working with others to extricate and transport people involved in incidents in surface operations that meets all of the required outcomes • consistent timely extricating and transporting people involved in incidents in surface operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to extricate and transport people involved in incidents in surface operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Surface operations may include:	• open-cut mines • coal preparation plants • surface operations of underground mines • quarries
Extrication **situations** may include:	• heights • depths • plant and equipment entrapment • light vehicles • heavy vehicles
Hazards may include:	• environmental • electrical • hazardous substances
Hazards inherent to surface mining methods and equipment may include:	• electrical • mechanical • magnitude / size of equipment • heights / depths • wall collapse • engulfment • traffic movements • water • weather conditions • chemicals • night conditions • bulk fuel storage and transportation • unsafe working practices

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	• topography • explosives
Emergency services may include:	• contractors • insurance companies • suppliers • local community • manufacturer • inspectorate • Mines Rescue Board • police • Mines Rescue Services • fire brigades • ambulance • medical staff • hospitals • CISD organisations • catering • clergy • state and federal government • media • coroner's representative • security services • solicitors • district check inspector • other mines • engineers • drill rigs • forensic
Communications may include:	• First Aid reports • 2-way radio • phone • mobile • phone • fax • e-mail
Extrication **equipment** may include:	• hydraulic rescue equipment • pneumatic lifting equipment • crowbars • hand tools • hacksaws • abrasive saws

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	• thermal cutting equipment
	• tirfor
	• oxygen therapy / resuscitation equipment
	• rescue boards
	• first aid equipment
	• cervical collars
	• stretchers
	• roping equipment
	• ladders
	• stretchers including:
	  • Stokes
	  • Ferno Washington
	  • SKED
	  • field
	• equipment including:
	  • pre-use checks/tests
	  • operational use checks/tests
	  • post-use checks/tests

Transport may include:	• ambulance • man-haul vehicle

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR309A Establish and operate from fresh air base

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and operating from fresh air base in underground metalliferous mines. It includes: preparing to establish, establishing and operating from fresh air bases.

Application of the Unit

This unit is appropriate for those working in operational roles, in underground mines, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to establish fresh air base	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and operating from ***fresh air base*** in underground metalliferous mines 1.2. Develop strategy for the establishment of the fresh air base 1.3. Analyse mine plans, characteristics, data and reports to locate and assess potential affected zones 1.4. Confirm effected fresh air zones through ***atmospheric testing*** 1.5. Identify and organise/obtain ***fresh air base resources*** 1.6. Check all fresh air base resources for correct, safe operation to manufacturer's specifications and mine requirements 1.7. Check selected testing and monitoring instruments for correct operation to manufacturer's specifications and mine requirements 1.8. Appoint fresh air base personnel with required competence
2. Establish the fresh air base	2.1. Transport to and install all allocated fresh air base resources 2.2. Test site gas levels to ensure they are within specified limits 2.3. Inspect roof, sides and floor for stability and safety 2.4. Install ***monitoring equipment*** in appropriate locations 2.5. Monitor atmosphere to maintain integrity of fresh air base in event of atmospheric changes 2.6. Maintain fresh air base in respirable air 2.7. Ensure escape strategy and equipment are available to enable fresh air base personnel to effect escape in emergency conditions 2.8. Install ***communication*** equipment in fresh air base and test for effective, clear and reliable operation

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3. Operate from fresh air base	3.1. Monitor atmosphere to ensure compliance with designated limits and ***log*** at recommended intervals 3.2. Communicate ***atmosphere conditions to Incident Control*** for ***instructions*** 3.3. Relocate fresh air bases if atmosphere becomes outside designated limits 3.4. Inform rescue team of fresh air base relocation and reason for decision to relocate 3.5. Control and monitor rescue team activities and movements to ensure team safety, duty of care and team tasks are achieved 3.6. Make available and keep all fresh air base equipment in a state of readiness for use in case of emergency 3.7. Brief, equip, check, log and dispatch rescue team to meet rescue operations requirements 3.8. Coordinate and control ***ancillary personnel*** and operations working from fresh air base 3.9. Maintain communications with teams and Incident Control to ensure safety of rescue teams and fresh air base personnel 3.10. Carry out handover briefings to ensure continuity of operations and team safety by oncoming personnel

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and operate from fresh air base in underground metalliferous mines:

- apply legislative, organisation and site requirements and procedures
- work as a team member
- apply procedures to assess a situation and make effective, safe decisions
- plan and apply contingency plans
- apply basic life support
- read mine plans and orientate in the underground mine
- apply requirements and procedures for locating and setting up a fresh air base
- use communications and signals
- establish search patterns and mark underground routes
- identify ground conditions
- brief and de-brief team members and Incident Control
- apply report writing techniques
- apply risk assessments processes
- select and use appropriate PPE
- apply procedures for the use of escape and relevant breathing apparatus
- read and interpret mine plan symbols
- apply procedures for monitoring and interpreting atmospheric conditions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and operate from fresh air base in underground metalliferous mines:

- role and responsibilities of the fresh air base controller
- standby / emergency procedures for fresh air base
- entrapment procedures
- underground environment
- underground transport systems
- ignition sources
- gas testing and monitoring instruments - types, limitations, function and operation
- types of fire and fire control methods
- detection, effects and contingencies with explosions
- call-out procedures

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- equipment requirements for rescue operations
- rescue team procedures and equipment
- standby/emergency procedures for fresh air base
- effects on people working in hot and humid atmospheres
- atmospheric monitoring
- types of breathing apparatus, their construction, operating principles and limitations
- factors affecting oxygen / air consumption
- fresh air base procedures and communications
- structure, role and responsibilities of Incident Control
- extrication methods
- ground support types and construction

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and operating from fresh air base in underground metalliferous mines • implementation of requirements, procedures and techniques for the safe, effective and efficient establishing and operating from fresh air base in underground metalliferous mines • working with others to establish and operate from fresh air base in underground metalliferous mines that meets all of the required outcomes • consistent timely establishing and operating from fresh air base in underground metalliferous mines that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency.
	The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to establish and operate from fresh air base in underground metalliferous mines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Fresh air base may be defined as:	• a continuously monitored station for dispatch or return of rescue teams in close proximity to irrespirable zones in known fresh air
Atmospheric testing may include:	• hand-held instruments • tube detectors • telemetric remote sampling
Fresh air base resources may include:	• tradespeople • doctors • paramedics • clergy • gas monitoring • communications • technicians • mine officials
Monitoring equipment refers to portable:	• electronic / chemical instruments • ventilation measuring instruments
Communications may include:	• telephones • radios • runners • 2-way radio • computer
Information may be **logged** by:	• log books • duty cards • tape recorder

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Atmosphere conditions may include:	• temperature • humidity • noise • gas levels • dust air-borne contaminations
Incident Control:	• has overall planning, approval and control of an incident
Instructions may include:	• tradespeople • doctors • paramedics • clergy • gas monitoring • communications • technicians • mine officials
Ancillary personnel may include:	• tradespeople • doctors • paramedics • clergy • gas monitoring • communications • technicians • mine officials

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR310A Provide support for rescue operations

Modification History

Not applicable.

Unit Descriptor

This unit covers providing support for rescue operations in the metalliferous mining industry. It includes: mustering teams; organising team and equipment; maintaining supply of resources; and recording and reporting resource allocation and usage.

Application of the Unit

This unit is appropriate for those working in operational roles on the surface who support the activities of mine rescue teams during rescue operations, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Muster teams	1.1. Access, interpret and apply ***compliance documentation*** relevant to providing support for rescue operations 1.2. Validate team members' current rescue competency and constitute teams to incident requirements, and rescue guidelines 1.3. Record rescue team membership 1.4. Assess and monitor team members' state of readiness for rescue operation 1.5. Allocate individual team preparation and mustering areas 1.6. Maintain team's state of readiness and utilise when advised by ***Incident Control*** 1.7. Regularly update team members on incident status
2. Organise team and equipment	2.1. Enlist and utilise support personnel 2.2. Identify and procure appropriate ***equipment*** to meet response to the incident 2.3. Allocate equipment to team and record allocation details 2.4. Repair, or replace and test faulty equipment 2.5. Record and review test results to ensure compliance with rescue guidelines, legislative requirements and site procedures 2.6. Advise and consult Incident Control on personnel and equipment status
3. Maintain supply of resources	3.1. Arrange transport for teams entering the mine 3.2. Identify, locate and procure ongoing resource requirements 3.3. Report unavailability of vital equipment to Incident Control 3.4. Distribute ongoing resource requirements to teams and ***fresh air base*** 3.5. Ensure continuity of catering and supplies for team 3.6. Ensure equipment is tested before going underground

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4. Record and report resource allocation and usage	4.1. Keep and collate written records at completion of duties 4.2. Log in and out and account for equipment 4.3. Carry out handover briefings to ensure continuity of operations and team safety by on coming personnel

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to provide support for rescue operations:

- apply legislative, organisation and site requirements and procedures
- apply procedures to coordinate activities and resources
- apply procedures to access and coordinate with external services and agencies
- apply problem solving techniques
- read maps and interpret symbols
- apply call-out response procedures
- work as a member of a team

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to provide support for rescue operations:

- role and responsibilities of support person
- mine surface layout
- use and care of self-rescuers
- breathing apparatus equipment and operation
- identification, sourcing and pre-testing of mine gas testing and monitoring instruments
- types of fire and fire fighting equipment
- equipment requirements for rescue operations
- rescue team procedures and equipment
- call-out procedures
- team composition and procedures
- air measurement and ventilation equipment
- extrication equipment
- hydraulic rescue equipment
- transport systems
- stretchers and lashings
- roping equipment
- communications equipment and signals
- route marking equipment
- ground support systems and equipment

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- role of external services and agencies
- roles and responsibilities and membership of Incident Control

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for providing support for rescue operations • implementation of requirements, procedures and techniques for the safe, effective and efficient provision of support for rescue operations • working with others to undertake and complete rescue operations that meet all of the required outcomes • consistent timely provision of support for rescue operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete rescue operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Incident Control:	• has control and makes decisions on the operations associated with dealing with the incident
Equipment may include:	• vehicles • competent personnel • breathing apparatus • team safety equipment • atmospheric monitoring equipment • hydraulic and pneumatic rescue equipment • rope equipment • incident-specific equipment such as body bags
Fresh air base can be defined as:	• a continuously monitored station for dispatch or return of teams in close proximity to active zones in known fresh air

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIERR311A Assess and implement life support systems and stabilise casualties

Modification History

Not applicable.

Unit Descriptor

This unit covers assessing and implementing of life support systems and stabilising casualties in the coal mining industry. It includes: assessing danger to rescuers, bystanders and casualties; accessing and cooperating with emergency services; gaining access to casualties; assessing casualties' condition and implementing life support systems; stabilising casualties in situ; handing over to emergency services; and restoring and refurbishing equipment to operational condition.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess danger to rescuers, bystanders and casualty	1.1. Access, interpret and apply ***compliance documentation*** relevant to assessing and implementing of life support systems and stabilising casualties 1.2. Identify ***hazards*** to rescue personnel and other personnel 1.3. Assess ***situation*** to ensure safety of team and other persons 1.4. Take actions to ensure safety of team and affected persons in accordance with requirements and procedures 1.5. Re-assess hazards and implement relevant measures 1.6. Implement restricted area protocols/methods
2. Access and cooperate with emergency services	2.1. Assess the incident to determine the emergency service type to be called in 2.2. Contact support services and call in to mine emergency in accordance with protocols 2.3. Establish the roles and responsibilities of the emergency service and ***communicate*** to rescue team members 2.4. Establish the roles and responsibilities of rescue team members in relation to emergency service people and communicate to both parties
3. Gain access to casualty	3.1. Apply ***TRIAGE*** principles to multiple-casualty situations 3.2. Assess situation to determine the appropriate safe method of access 3.3. Identify and obtain ***access equipment*** in accordance with requirements and procedures 3.4. Use equipment to gain access to people according to manufacturer recommendations and within the guidelines of ***Accredited Rescue Services*** to ensure the health and safety of all affected people
4. Assess casualties' condition and implement life support	4.1. Perform ***primary and secondary assessments*** for basic life support to an

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systems	industry accepted standard 4.2. Apply identified ***life support*** techniques 4.3. Continuously monitor casualties and record ***vital signs*** 4.4. ***Record*** all relevant information and communicate to relevant officials and emergency services
5. Stabilise casualty in Situ	5.1. Maintain implemented life support techniques to keep casualty in a stable condition 5.2. Continuously monitor and re-assess casualty's condition and take life support actions in accordance with requirements and procedures 5.3. Continuously monitor casualty's vital signs and take action to maintain casualty in a stable condition
6. Hand over to emergency services	6.1. Hand over casualty/s to relevant emergency service's personnel 6.2. Hand over record of casualty/s vital signs 6.3. Assist relevant emergency service with life support if requested
7. Restore and refurbish equipment to operational condition	7.1. Inspect all equipment used for any damage or contamination sustained in the operation 7.2. Dispose of contaminated medical waste as per Australian standards 7.3. Repair or replace all defective equipment to meet manufacturer specifications or Australian standards 7.4. Clean and sterilise equipment to meet manufacturer specifications or Australian standards 7.5. ***Return the rescue equipment to operational readiness***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assess and implement life support systems and stabilise casualties:

- apply legislative, organisation and site requirements and procedures
- select appropriate types of equipment and apply safe methods of operation to gain access to casualties
- assess and control hazards and associated risks
- apply TRIAGE
- apply basic life support to casualties
- apply primary assessment to casualties
- fault-find and remedy equipment
- record operations for incident reports
- operate communication systems and observe communication protocols
- gain access to and liaise with emergency services and mine officials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assess and implement life support systems and stabilise casualties:

- TRIAGE principles, protocols and techniques
- basic life support
- primary assessment
- secondary assessment
- hazard/risk management principles and practices, including assessment and control
- CISD procedures and agencies
- mine site plant type and construction in relation to access methods and equipment
- accident investigations
- equipment used for gaining access to casualties - types, selection, application, safe method of operation, fault-finding
- recording systems and protocols (sequence of events and actions taken)
- liaison protocols with support services
- communication systems and protocols
- types, role and responsibilities of emergency services and mine officials

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assessment and implementation of life support systems and the stabilising of casualties • implementation of requirements, procedures and techniques for the safe, effective and efficient assessing and implementing of life support systems and stabilising casualties • working with others to assess and implement life support systems, stabilise casualties and meet all of the required outcomes • consistent timely assessing and implementing of life support systems and stabilising casualties that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to assess and implement life support systems and stabilise casualties

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazards may include:	• environmental • electrical • hazardous substances
Hazards inherent to open-cut mining methods and equipment may include:	• electrical • mechanical • magnitude / size of equipment • heights / depths • wall collapse • engulfment • traffic movements • water • weather conditions • chemicals • night conditions • bulk fuel storage and transportation • unsafe working practices • topography • explosives
Situations may include:	• heights • depths • plant and equipment entrapment • environment • light vehicles • heavy vehicles
Communications may include:	• First Aid reports

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	• 2-way radio • phone • mobile phone • fax • e-mail
TRIAGE principles and practices used must be:	• as recommended by recognised authorities such as St John
Access equipment may include:	• hydraulic rescue equipment • pneumatic lifting equipment • crowbars • hand tools • hacksaws • abrasive saws • thermal cutting equipment • tirfor • oxygen therapy / resuscitation equipment
Equipment use may include:	• pre-use checks / tests • operation use checks / tests • post-use checks /tests
Accredited Rescue Services are all agencies associated with the State Rescue Board including:	• Police Rescue • Ambulance Rescue • Fire Brigade • Bush Fire Council • Volunteer Rescue Association (VRA) • State Emergency Services (SES)
Primary and secondary assessment is:	• an overall assessment and treatment of injuries to a person and further assessment and treatment after monitoring
Life support requirements include, but are not limited to:	• airway management • haemorrhage control • stabilisation of injuries
Vital signs include, but are not limited to:	• respiration • pulse • blood pressure • conscious level
Recording is:	• carried out to statutory and mine-specific guidelines and formats
Returning equipment to operational readiness may include:	• inspection • cleaning/sterilisation • repair

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	• replacement • re-fill to manufacturer and suppliers recommendations

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR401B Apply and monitor surface operations emergency preparedness and response systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of surface operations emergency preparedness and response systems in resources and infrastructure industries. It includes planning, preparing and applying of the plan, and applying routine plan maintenance procedures.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, on worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the application of the plan	1.1. Access, ***interpret*** and apply ***compliance documentation*** relevant to the application and monitoring of surface operations emergency preparedness and response systems 1.2. Access, interpret and explain the emergency preparedness and response plans 1.3. Identify and explain roles and responsibilities, as specified in the plan 1.4. ***Communicate*** and explain work group and individual responsibilities and tasks in an effective and timely manner 1.5. Identify, obtain and allocate ***resources*** required for the application of the plan 1.6. Identify individual training needs
2. Apply the plan	2.1. Receive and communicate ***incident*** information in accordance with the emergency plan 2.2. Assess and communicate the nature and scope of the incident in accordance with the emergency plan 2.3. Apply and monitor emergency response and evacuation plans and procedures in accordance with the emergency plan 2.4. Apply procedures for monitoring, recording and reporting on emergency incidents according to the emergency plan 2.5. Apply procedures for the collection, analysis and validation of ***emergency preparedness and response data*** 2.6. Contribute to the management of the situation or incident in accordance with the emergency plan 2.7. Apply and monitor action plans in accordance with the emergency plans 2.8. Select emergency equipment and use appropriately to deal with the emergency 2.9. Isolate potential sources of danger and put in place warning signs/signals/barriers 2.10. Coordinate and control response to emergency or incident to ensure continuing

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	safety of personnel at the site 2.11. Communicate incident information in accordance with the emergency plan 2.12. Participate in ***audit*** and review requirements in accordance with the emergency plan as per site requirements
3. Apply routine plan maintenance procedures	3.1. Schedule and carry out inspections, ***equipment*** repair and maintenance activities in accordance with the emergency preparedness and response plans 3.2. Record and report maintenance requirements/activities in accordance with the emergency preparedness and response plans

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply and monitor surface operations emergency preparedness and response systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information relevant to emergency preparedness and response
- access, interpret and apply emergency preparedness and response information related to the site
- apply emergency preparedness and response systems and plans
- collect, collate, interpret and report incident/emergency data
- perform basic mathematical calculations
- apply investigation and reporting procedures
- apply effective workplace communication procedures
- access, interpret and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- apply risk management processes and techniques
- apply procedures to initiate emergency preparedness and response training
- propose practical recommendations for identified key issues

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to apply and monitor surface operations emergency preparedness and response systems:

- legislative and site requirements for emergency preparedness and response
- audit and review processes and techniques
- training and assessment principles
- training systems
- emergency response and evacuation planning processes and techniques
- structure of emergency procedures guidelines
- legal requirements of incident management teams
- self escape, aided rescue and respond to incident philosophies, systems and equipment
- risk management principles and techniques
- structure of emergency organisations
- intervention/control techniques for heating, fires, explosions, outburst, or inrushes

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- effects of heat and humidity
- effects of visibility
- escape strategies and technology
- site environmental risks and controls
- equipment requirements for different types of emergency
- call-out procedures
- emotional effects of emergencies on rescuers and site personnel
- titles and roles of members of incident management team
- equipment handling

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application and monitoring of surface operations emergency preparedness and response systems • implementation of appropriate procedures and techniques for the safe, effective and efficient application and monitoring of surface operations emergency preparedness and response systems • working with others to plan, prepare and conduct surface operations emergency preparedness and response systems • provision of clear and timely instruction and supervision by the individual of those involved in surface operations emergency preparedness and response systems • evidence of the consistent successful application and monitoring of surface operations emergency preparedness and response systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct surface operations emergency preparedness and response
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the surface operations emergency preparedness and response

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Interpret is defined as:	• understanding of what is needed by the person within their job role
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Communications may include:	• radio/PED • telephone/DAC • telemetry • oral • written • computers • runners
Resources may include:	• internal site services and resources • contractors • local community • Inspectorate • police • Mines Rescue Service • fire brigades • ambulance • hospitals • critical incident stress debriefing organisations • media • district check inspector • other sites • entrapment procedures
Incidents can be caused by:	• explosion • fire

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	• strata failure • inrush • outburst • irrespirable atmosphere • environmental incident • hazardous chemicals • explosives • vehicle accidents • wind blast • failure of ventilation control devices/appliances
Incidents can be identified as:	• minor accident • major accident or fatality • underground explosion • fire • ignition • outburst • inrush • spontaneous combustion • surface fire which disrupts operations • environmental incidents • bomb threat • terrorist attack • high potential incidents • biological incidents • sabotage
Emergency preparedness and response data may include:	• gas levels and trends • change in temperature • change in ventilation • visibility • escape route conditions • status of caches, quick fill stations and first response stations • root cause of the emergency incident • status of communication equipment • status of monitoring equipment • location and condition of persons • hazards identified on escape
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements

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	are implemented effectively and are suitable to achieve the organisation's policy and objectives
Equipment refers to that needed to control the incident and may include:	• self escape and first response equipment • fire fighting equipment • rescue equipment • mining equipment • transport • specialised equipment from external sources • monitoring and analysis equipment

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR402A Apply and monitor underground coal mine emergency preparedness and response systems

Modification History

Not applicable.

Unit Descriptor

This unit covers applying and monitoring emergency preparedness and response systems in the underground coal mining operations. It includes: planning and preparing for the application of the plan; applying the plan; and applying routine plan maintenance procedures.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the application of the plan	1.1. Access, ***interpret*** and apply ***compliance documentation*** relevant to underground coal mine emergency preparedness and response systems 1.2. Access, interpret and explain the emergency preparedness and response plans 1.3. Identify and explain roles and responsibilities, as specified in the emergency preparedness and response plans 1.4. ***Communicate*** and explain work group and individual responsibilities and tasks in an effective and timely manner 1.5. Identify, obtain and allocate ***resources*** required for the application of the emergency preparedness and response plans 1.6. Identify individual training needs
2. Apply the plan	2.1. Receive and communicate ***incident*** information in accordance with the emergency plan 2.2. Assess and communicate the nature and scope of the *incident* in accordance with the emergency plan 2.3. Apply and monitor emergency response and evacuation plans and procedures in accordance with the emergency plan 2.4. Apply procedures for monitoring, recording and reporting on emergency incidents according to the emergency plan 2.5. Apply procedures for the collection, analysis and validation of ***emergency preparedness and response data*** 2.6. Contribute to the management of the situation/incident in accordance with the emergency plan 2.7. Apply and monitor action plans in accordance with the emergency plans 2.8. Communicate incident information in accordance with the emergency plan 2.9. Participate in ***audit*** and review requirements in accordance with the emergency plan as per site requirements

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3. Apply routine plan maintenance procedures	3.1. Schedule and carry out inspections, equipment repair and maintenance activities in accordance with the emergency preparedness and response plans 3.2. Record and report maintenance requirements / activities in accordance with the emergency preparedness and response plans

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply and monitor underground coal mine emergency preparedness and response systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information relevant to emergency preparedness and response
- access, interpret and apply emergency preparedness and response information related to the mine
- apply emergency preparedness and response systems and plans
- collect, collate, interpret and report incident / emergency data
- perform basic mathematical calculations
- apply investigation and report preparation procedures
- communicate effectively in the workplace
- access, interpret and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- apply risk management processes and techniques
- initiate the emergency preparedness and response training

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply and monitor underground coal mine emergency preparedness and response systems:

- legislative and site requirements for emergency preparedness and response
- audit and review processes and techniques
- training and assessment principles
- training systems
- emergency response and evacuation planning processes and techniques
- structure of emergency procedures guidelines
- legal requirements of incident management teams
- self escape, aided rescue and respond to incident philosophies, systems and equipment
- risk management principles and techniques
- structure of emergency organisations
- intervention and control techniques for heating, fires, explosions, outburst, or inrushes

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- effects of heat and humidity
- effects of visibility
- escape strategies and technology
- mine environmental risks and controls
- equipment requirements for different types of emergency
- ventilation and its influence on incidents
- deployment of personnel underground under deputies control
- procedure/policy for re-deployment of personnel underground after evacuation
- call-out procedures
- emotional effects of emergencies on rescuers and mine personnel
- titles and roles of members of incident management team
- the requirements and structure for place of safety/fresh air base
- equipment handling
- sealing procedures and the legislative implications

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying and monitoring underground coal mine emergency preparedness and response systems • implementation of appropriate procedures and techniques for the safe, effective and efficient application and monitoring of underground coal mine emergency preparedness and response systems • working with others to plan, prepare, apply and monitor underground coal mine emergency preparedness and response systems • provision of clear and timely instruction and supervision by the individual of those involved in underground coal mine emergency preparedness and response systems • evidence of the consistent successful application and monitoring of underground coal mine emergency preparedness and response systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare, apply and monitor underground coal mine emergency preparedness and response systems
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the underground coal mine emergency preparedness and

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	response systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Interpret is defined as:	• the understanding needed by the person within their job role
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Incidents can be caused by:	• explosion • fire • strata failure • inrush • outburst • irrespirable atmosphere • environmental incident • hazardous chemicals • explosives • vehicle accidents • wind blast • failure of ventilation control devices/appliances
Types of **incident** can be identified as:	• minor accident • major accident or fatality • underground explosion • fire • ignition • spontaneous combustion • surface fire which disrupts operations • environmental incidents • bomb threat • terrorist attack

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	• high potential incidents • biological incidents • sabotage
Emergency preparedness and response data may include:	• gas levels and trends • change in temperature • change in ventilation • visibility • escape route conditions • status of caches, quick fill stations and first response stations • root cause of the emergency incident • status of communication equipment • status of monitoring equipment • location and condition of persons • hazards identified on escape
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives
Required services and resources can include, but are not limited to:	• internal mine services and resources • contractors • local community • Inspectorate • police • Mines Rescue Service • fire brigades • ambulance • hospitals • critical incident stress debriefing organisations • media • district check inspector • other mines • entrapment procedures
Communications can include:	• radio/PED • telephone/DAC • telemetry • oral • written • computers

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	• runners
Equipment refers to that needed to control the incident and includes but is not restricted to:	• self escape and first response equipment • fire fighting equipment • rescue equipment • mining equipment • transport • specialised equipment from external sources • monitoring and analysis equipment

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR403A Lead rescue team

Modification History

Not applicable.

Unit Descriptor

This unit covers leading of rescue teams in underground metalliferous mining operations. It includes: preparing for rescue operation; briefing team members; reporting to and liaising with Incident Control; leading and monitoring the rescue team; and completing team operations.

Application of the Unit

This unit is appropriate for those working in a supervisory or technical specialist roles, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for rescue operation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the underground metalliferous mine rescue 1.2. Obtain and verify ***information*** about the rescue operation 1.3. Obtain mine plan and determine route of travel and mark on mine plan 1.4. Develop, or agree with ***Incident Control***, the strategy search patterns and contingency plans for the rescue operation 1.5. Implement ***communication*** system and equipment 1.6. Assess team members' competence to meet the rescue situation and task requirements and constitute ***team*** 1.7. Allocate ***team roles*** to best utilise individual team member competence 1.8. Identify, test and allocate rescue and safety ***equipment*** and materials to team members 1.9. Determine and ensure availability of any ancillary equipment required with Incident Control and/or mining personnel
2. Brief team members	2.1. Provide information to team members on their roles, tasks and responsibilities to allow effective, safe rescue operation 2.2. Ascertain team members understanding of their roles, tasks and responsibilities
3. Report to and liaise with Incident Control	3.1. Observe reporting formats and protocols 3.2. Confirm rescue strategies with Incident Control 3.3. Receive and follow ***operational advice*** from Incident Control 3.4. Relay information to Incident Control which can affect team operations or safety to team members 3.5. Complete records required in accordance with legislative requirements or site requirements
4. Lead and monitor rescue team	4.1. Carry out recommended procedures for entering hazardous or ***irrespirable***

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	atmospheres and situations 4.2. Continually assess environment, tasks and hazards associated with rescue team's safety, and apply judgements to ensure tasks and procedures are carried out within rescue team's ability 4.3. Continuously assess hazards and implement controls to minimise risk 4.4. Monitor team member's ***physical*** and ***emotional*** condition and take appropriate action to address any problems 4.5. Provide information to team members about changes which can affect their operations or safety 4.6. Ensure team adheres to team rescue procedures according to standard rescue guidelines 4.7. Implement coaching processes within ***the team and*** identify further assistance
5. Complete team operation	5.1. Provide verbal report to Incident Control to advise of status of operation and significant variations to expected conditions 5.2. Formally de-brief team to obtain and collate incident and procedural information 5.3. Provide comprehensive oral and written report on team's deployment and consequential outcomes to Incident Control 5.4. ***Report*** on significant physical or emotional condition of team members 5.5. Offer ***team*** members critical incident stress debriefing and counselling in an appropriate environment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to lead rescue teams:

- apply legislative, organisation and site requirements and procedures
- apply leadership skills
- work with teams
- assess a situation and make effective, safe decisions
- apply basic life support
- apply procedures to establish search patterns and mark routes
- apply risk assessments processes
- apply contingency measures with breathing apparatus in emergency situations
- select and use personal protection equipment
- operate in escape apparatus
- read and interpret mine plans and symbols
- take air measurement and ventilation readings
- take temperature and relative humidity measures
- interpret and use signals
- access, interpret and apply technical and safety information
- apply diagnostic/faultfinding techniques
- apply isolation procedures

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to lead rescue teams:

- principles of leadership
- counselling techniques
- rescue guidelines
- reporting and recording methods and protocols
- entrapment procedures
- mining methods and environment
- transport systems
- ignition sources
- gas testing and monitoring instruments - types, limitations, function and operation
- types of fire and fire control methods
- call-out procedures
- rescue team procedures and equipment

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- standby / emergency procedures
- effects on people working in hot and humid atmospheres
- air measurement and ventilation systems
- atmospheric monitoring and ventilation systems
- types of breathing apparatus: their construction, operating principles and limitations
- factors affecting oxygen/air consumption
- techniques for resuscitation in irrespirable atmospheres
- fresh air base procedures and communications
- structure, role and responsibilities of Incident Control
- critical incident stress debriefing
- hazardous substances: their effects and controls
- extrication methods
- risk management procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the leading of rescue teams in underground metalliferous mines • implementation of appropriate procedures and techniques for the safe, effective and efficient leading of rescue teams in underground metalliferous mines • working with others to plan, prepare and conduct underground metalliferous mining rescue procedures • provision of clear and timely instruction and supervision by the individual of those involved in underground metalliferous mining rescue • evidence of the consistent successful leadership of underground metalliferous mining rescue procedures
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct underground metalliferous mining rescue procedures
	  • provision of clear and timely instruction and supervision by the individual of those underground metalliferous mining rescue procedures

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Information may include:	• arrivals • departures • team names • suit/set identification numbers • route of travel • expected time of return
Incident Control:	• has overall planning, approval and control of an incident
Communications may include:	• reports • 2-way radio • telephone • mobile phone • hand signals • runners • light signals
Teams may comprise two or more members, depending on such factors as:	• respiratory protection • distance/communications
Team roles may include:	• rescue team leader • deputy rescue team leader • rescue team member
Equipment is:	• the equipment specified in the mine's rescue guidelines and protocols
Operational advice may include:	• re-location • evacuation

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	• notification to active team • notification to surface
Irrespirable atmosphere is considered as an atmosphere which is unsafe for a person to breathe as a result of either oxygen depletion or the presence of:	• toxic fumes • gases • contaminants
Physical condition may be affected by:	• heat exhaustion • dehydration • injuries from slipping / tripping / falls • respiratory problems • physical exhaustion • vomiting • workload
Emotional condition may be affected by:	• panic • fright • stress • distress • claustrophobia
Reports may be:	• written or oral

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR404A Apply and monitor underground metalliferous mine emergency preparedness and response systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of underground metalliferous mine emergency preparedness and response systems in resources and infrastructure industries. It includes planning, preparing and applying of the plan, and applying routine plan maintenance procedures.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, on worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the application of the plan	1.1. Access, ***interpret*** and apply ***compliance documentation*** relevant to underground metalliferous mine emergency preparedness and response 1.2. Access, interpret and explain the emergency preparedness and response plans 1.3. Identify and explain roles and responsibilities, as specified in the plan 1.4. ***Communicate*** and explain work group and individual responsibilities and tasks in an effective and timely manner 1.5. Identify, obtain and allocate ***resources*** required for the application of the plan 1.6. Identify individual training needs
2. Apply the plan	2.1. Receive and communicate ***incident*** information in accordance with the emergency plan 2.2. Assess and communicate the nature and scope of the incident in accordance with the emergency plan 2.3. Apply and monitor emergency response and evacuation plans and procedures in accordance with the emergency plan 2.4. Apply procedures for monitoring, recording and reporting on emergency incidents according to the emergency plan 2.5. Apply procedures for the collection, analysis and validation of ***emergency preparedness and response data*** 2.6. Contribute to the management of the situation or incident in accordance with the emergency plan 2.7. Apply and monitor action plans in accordance with the emergency plans 2.8. Select emergency equipment and use appropriately to deal with the emergency 2.9. Isolate potential sources of danger and put in place warning signs/signals/barriers 2.10. Response to emergency or incident *is* coordinated and controlled to ensure continuing safety of personnel at the site

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	2.11. Communicate incident information in accordance with the emergency plan 2.12. Participate in ***audit*** and review requirements in accordance with the emergency plan as per site requirements
3. Apply routine plan maintenance procedures	3.1. Schedule and carry out inspections, ***equipment*** repair and maintenance activities in accordance with the emergency preparedness and response plans 3.2. Record and report maintenance requirements/activities in accordance with the emergency preparedness and response plans

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply and monitor underground metalliferous mine emergency preparedness and response systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information relevant to emergency preparedness and response
- access, interpret and apply emergency preparedness and response information related to the site
- apply emergency preparedness and response systems and plans
- collect, collate, interpret and report incident/emergency data
- perform basic mathematical calculations
- apply investigation and reporting procedures
- apply effective workplace communication procedures
- access, interpret and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- apply risk management processes and techniques
- apply procedures to initiate emergency preparedness and response training
- propose practical recommendations for identified key issues

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply and monitor underground metalliferous mine emergency preparedness and response systems:

- legislative and site requirements for emergency preparedness and response
- audit and review processes and techniques
- training and assessment principles
- training systems
- emergency response and evacuation planning processes and techniques
- structure of emergency procedures guidelines
- legal requirements of incident management teams
- self escape, aided rescue and respond to incident philosophies, systems and equipment
- risk management principles and techniques
- structure of emergency organisations
- intervention/control techniques for heating, fires, explosions, outburst, or inrushes

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- effects of heat and humidity
- effects of visibility
- escape strategies and technology
- site environmental risks and controls
- equipment requirements for different types of emergency
- ventilation and its influence on incidents
- deployment of personnel underground under deputies control
- procedure/policy for re-deployment of personnel underground after evacuation
- call-out procedures
- emotional effects of emergencies on rescuers and site personnel
- titles and roles of members of incident management team
- the requirements and structure for place of safety/fresh air base
- equipment handling
- sealing procedures and the legislative implications

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application and monitoring of underground metalliferous mine emergency preparedness and response systems • implementation of appropriate procedures and techniques for the safe, effective and efficient application and monitoring of underground metalliferous mine emergency preparedness and response systems • working with others to plan, prepare and conduct underground metalliferous mine emergency preparedness and response systems • provision of clear and timely instruction and supervision by the individual of those involved in applying underground metalliferous mine emergency preparedness and response systems • evidence of the consistent successful application and monitoring of underground metalliferous mine emergency preparedness and response systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and apply underground metalliferous mine emergency preparedness and response
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the underground metalliferous mine emergency preparedness and response

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Interpret is defined as:	• understanding of what is needed by the person within their job role
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Communications may include:	• radio/PED • telephone/DAC • telemetry • oral • written • computers • runners
Resources may include:	• internal site services and resources • contractors • local community • Inspectorate • police • Mines Rescue Service • fire brigades • ambulance • hospitals • critical incident stress debriefing organisations • media • district check inspector • other sites • entrapment procedures
Incidents can be caused by:	• explosion • fire

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	• strata failure • inrush • outburst • irrespirable atmosphere • environmental incident • hazardous chemicals • explosives • vehicle accidents • wind blast • failure of ventilation control devices/appliances
Incidents can be identified as:	• minor accident • major accident or fatality • underground explosion • fire • ignition • outburst • inrush • spontaneous combustion • surface fire which disrupts operations • environmental incidents • bomb threat • terrorist attack • high potential incidents • biological incidents • sabotage
Emergency preparedness and response data may include:	• gas levels and trends • change in temperature • change in ventilation • visibility • escape route conditions • status of caches, quick fill stations and first response stations • root cause of the emergency incident • status of communication equipment • status of monitoring equipment • location and condition of persons • hazards identified on escape
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements

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	are implemented effectively and are suitable to achieve the organisation's policy and objectives
Equipment refers to that needed to control the incident and may include:	• self escape and first response equipment • fire fighting equipment • rescue equipment • mining equipment • transport • specialised equipment from external sources • monitoring and analysis equipment

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR501A Implement underground coal mine emergency preparedness and response systems

Modification History

Not applicable.

Unit Descriptor

This unit covers implementing and maintaining underground coal mine emergency management systems. It includes: planning and preparing for implementation of and implement the management system; implementing post-incident management procedures; and auditing the management system.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for implementation of management system	1.1. Access, interpret and apply ***compliance documentation*** relevant to implementing and maintaining underground coal mine ***emergency management systems*** 1.2. Identify and ***interpret*** the legislative and site requirements related to emergency preparedness and response management 1.3. Access, interpret and clarify the management system 1.4. Identify and ***communicate*** to all persons, roles and responsibilities, as specified in the emergency preparedness and response plans 1.5. Identify, forecast, obtain and allocate/schedule ***resources*** required for the implementation of the management system 1.6. Identify training needs
2. Implement the management system	2.1. Implement the allocation and installation of resources in accordance with the management system 2.2. Receive and communicate ***incident*** information in accordance with the management system 2.3. Assess and communicate the nature and scope of the incident in accordance with the management system 2.4. Identify and implement emergency response and evacuation plans in accordance with the management system 2.5. Implement procedures for monitoring, recording and reporting on emergency incidents according to legislative requirements and those of the management system 2.6. Implement procedures for the collection, analysis and validation of ***emergency preparedness and response data*** 2.7. Implement the emergency management system training plan 2.8. Develop and implement ***action plans*** to manage the situation / incident in accordance with the emergency plan

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	2.9. Deploy ***resources*** to meet the requirements of the action plan 2.10. Assess and communicate effectiveness of action plan to achieve required outcomes in accordance with the management system 2.11. Communicate incident information in accordance with the management system
3. Implement post-incident management procedures	3.1. Contribute to plans to ***manage post-incident*** actions in accordance with legislative and site requirements 3.2. Implement post-incident action plans in accordance with the management system 3.3. Contribute to investigations into the nature and cause of the situation / incident and submit relevant reports in accordance with the management system 3.4. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to the management system
4. Audit the management system	4.1. ***Audit*** emergency preparedness and response systems and procedures for compliance with legislative requirements and the emergency management system 4.2. Audit emergency preparedness and response communication and recording systems for compliance with legislative and site requirements 4.3. Audit the emergency management system training plan for currency, relevance and compliance with legislative and site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement and maintain underground coal mine emergency management systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information relevant to emergency preparedness and response
- access and analyse emergency preparedness and response information related to the mine
- interpret and apply design criteria for emergency preparedness and response systems and plans
- collect, collate and interpret incident / emergency data
- apply fault-tree analyses
- conduct investigations and prepare reports
- communicate effectively in the workplace
- conduct incident de-briefs
- access, interpret and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- implement the emergency preparedness and response training program
- apply risk management processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement and maintain underground coal mine emergency management systems:

- legislative and site requirements for emergency preparedness and response systems
- legislation applicable to mines
- emergency response planning processes and techniques
- audit and review processes and techniques
- site document control requirements
- training and assessment principles
- industry and legislative stakeholders
- mine incidents and risks
- classification of incidents
- structure of emergency procedures guidelines
- legal requirements of incident management teams

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- self-escape, aided rescue and respond to incident philosophies , systems and equipment
- risk management principles and techniques
- structure of emergency organisations
- structure, roles, capabilities and limitations of external services and agencies relevant to emergency preparedness and response
- intervention and control techniques for heating, fires, explosions, outburst, extrication or inrushes
- the effects of heat and humidity
- the effects of visibility
- escape strategies and technology
- environmental risks and controls
- equipment requirements for different types of emergency
- ventilation and its influence on incidents
- deployment of personnel underground
- procedure/policy for re-deployment of personnel underground after evacuation
- call-out procedures
- emotional effects of emergencies on rescuers and mine personnel
- titles and roles of members of incident management team
- the requirements and structure for fresh air base
- legal implications of incidents
- the role of stakeholders
- numbers needed to run the mine at planned operational levels
- equipment handling
- economic considerations and decisions
- insurance policies and considerations
- mine closure procedures and the legislative implications
- sealing procedures and the legislative implications
- de-briefing processes
- emergency incident management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for implementing and maintaining underground coal mine emergency management systems • implementation of procedures and techniques for the safe, effective and efficient implementation and maintenance of underground coal mine emergency management systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to implement and maintain underground coal mine emergency management systems • consistent successful implementation and maintenance of underground coal mine emergency management systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in implementing and maintaining underground coal mine emergency management systems
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary

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	evidence of the candidate's: • working with others to implement and maintain underground coal mine emergency management systems • provision of clear and timely required support and advice on the implementation and maintenance of underground coal mine emergency management systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Emergency management system is a documented system for the control of emergencies and the resources put in place as a requirement of this system, including:	• hazard identification and quantification • risk assessment • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review
Emergency management system may include procedures for:	• mine atmosphere monitoring • ventilation systems and usage • inertisation techniques • mine plans • trigger action response plans • emergency procedures • training and education • liaison with external agencies
Interpret is defined as:	• the understanding needed by the person within their job role
Communications can include:	• radio / PED • telephone / DAC • telemetry • verbal • written • computers • runners
Resources may include:	• mine services

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	• mine personnel • emergency equipment • Internet mine services and resources • contractors • insurance companies • suppliers • local community • manufacturers • Inspectorate • Joint Coal Board • police • Mines Rescue Service • fire brigades • ambulance • medical staff • hospital • critical incident stress debriefing organisations • local emergency management organisations • community service organisations • clergy • federal, state and local government • media • coroner's representative • security services • solicitors • district check inspector • mutual response from other mines • engineers • inertisation • down-hole camera • drill rigs • forensic • self escape and first response equipment • fire fighting equipment • rescue equipment • mining equipment • transport • specialised equipment from external sources • monitoring and analysis equipment
Incidents may include:	• explosion • fire • roof fall

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	• strata failure • inrush • outburst • irrespirable atmosphere • environmental incident • hazard chemicals • explosives • vehicle accidents • wind blast • failure of ventilation control devices/appliances
Types of **incident** can be identified as:	• fatality • serious accident • high potential incidents • medically treated • accident • underground explosion or fire • ignition • spontaneous combustion • surface fire which disrupts operations • environmental incidents • bomb threat • terrorist attack • biological incidents • sabotage
Emergency preparedness and response data may include:	• gas levels and trends • change in temperature • change in ventilation • visibility • escape route conditions • status of caches, quick fill stations and first response stations • root cause of the emergency incident • status of communication equipment • status of monitoring equipment • location and condition of persons • hazards identified on escape
An **Action Plan** is:	• A list of activities developed as a prepared response to assist in the control of an incident, e.g. fire, where such controls are not covered by the site emergency management system. Action plans may be different for each

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	incident and developed at the time of the incident occurring
Post-incident management is the control of activities arising from an incident and may include:	• legal advice • environmental aspects • critical incident stress de-briefing • de-briefing • interviewing • investigations • witness interview statements • restoration of normal operations • media releases • public relations • employee welfare and family support • security of evidence • liaison with statutory / legal bodies • investigations required by legislation • review of emergency procedures • documentation of ongoing operations • restoration of emergency preparedness
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR503A Implement emergency preparedness and response systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of emergency preparedness and response systems in resources and infrastructure industries. It includes planning and preparing for implementing site procedures, implementing site procedures and post-incident management procedures, and auditing the procedures.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles within:

- Civil construction
- Surface coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for implementing site procedures	1.1. Access, interpret and apply ***compliance documentation*** relevant to emergency preparedness and response implementation 1.2. Access, interpret and clarify the ***emergency preparedness and response system*** 1.3. Identify, clarify and ***communicate*** to all persons, roles and responsibilities, as specified in the established emergency preparedness and response procedures 1.4. Identify, forecast, obtain and allocate/schedule resources required for the implementation of established emergency preparedness and response procedures 1.5. Implement the emergency preparedness and response training program 1.6. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to established emergency preparedness and response implementation procedures
2. Implement site procedures	2.1. Receive and communicate ***incident*** information in accordance with established emergency preparedness and response procedures 2.2. Assess and communicate the nature and scope of the incident in accordance with emergency preparedness and response plans 2.3. Identify and implement relevant emergency plans in accordance established emergency preparedness and response procedures 2.4. Implement emergency response and evacuation plans and procedures in accordance with established emergency preparedness and response procedures 2.5. Implement ***operations facilities*** for incident management in accordance with established emergency preparedness and response procedures 2.6. Implement procedures for monitoring, recording and reporting on emergency incidents according to statutory requirements and those of established

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	emergency preparedness and response procedures 2.7. Implement procedures for the collection and analysis of emergency preparedness and response data 2.8. Develop and contribute action plans to manage the situation/incident in accordance with emergency procedures 2.9. Implement action plans in accordance with established emergency preparedness and response procedures 2.10. Deploy ***required services***, ***personnel***, ***equipment and resources*** to meet action plan 2.11. Assess and communicate effectiveness of action plan to achieve required outcomes in accordance with established emergency preparedness and response procedures 2.12. Communicate incident information in accordance with established emergency preparedness and response procedures
3. Implement post-incident management procedures	3.1. Contribute to plans to manage ***post-incident actions*** are in accordance with statutory and site requirements 3.2. Implement post-incident action plans in accordance with established emergency preparedness and response procedures 3.3. Contribute to investigations into the nature and cause of the situation/incident and submit relevant reports in accordance with established emergency preparedness and response procedures
4. Audit procedures	4.1. ***Audit*** emergency preparedness and response systems and procedures for compliance with statutory and emergency preparedness and response procedures requirements 4.2. Audit emergency preparedness and response communication and recording systems for compliance with established emergency preparedness and response procedures' requirements. 4.3. Audit emergency preparedness and response training program for currency,

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	relevance and compliance with established emergency preparedness and response procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement emergency preparedness and response systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information relevant to emergency preparedness and response
- access and analyse emergency preparedness and response information related to the site
- interpret and apply design criteria for emergency preparedness and response systems and plans
- collect, collate and interpret incident/emergency data
- apply fault-tree analyses
- apply procedures for conducting enquiries/investigations and prepare reports
- communicate effectively in the workplace
- conduct an incident de-brief
- access, interpret and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- apply procedures to implement the emergency preparedness and response training program
- apply risk management processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement emergency preparedness and response systems:

- legislative and statutory requirements for emergency preparedness and response systems
- legislation applicable to sites
- rescue guidelines
- emergency response system design and functionality
- emergency response planning processes and techniques
- audit review process and techniques
- site document control requirements
- training and assessment principles
- industry and legislative stakeholders
- site incidents and risks

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- classification of incidents
- structure of emergency procedures guidelines
- legal requirements of incident management teams
- hazard identification
- self-escape philosophies, systems and equipment
- risk management principles and techniques
- structure of emergency organisations
- structure, roles, capabilities and limitations of external services and agencies relevant to emergency preparedness and response
- intervention and control techniques for heating, fires, explosions, outburst, extrication or inrushes
- the effects of heat and humidity
- the effects of visibility development, administration and review of procedures that apply to the system
- rescue team structure, procedures and equipment
- escape strategies and technology
- environmental risks and controls
- equipment requirements for different types of emergency
- ventilation and its influence on incidents
- deployment of staff
- procedure/policy for re-deployment of personnel underground after evacuation
- call-out procedures
- emotional effects of emergencies on rescuers and site personnel
- titles and roles of members of incident management team
- legal implications of incidents
- the role of stakeholders
- number of personnel needed to run the site at planned operational levels
- equipment handling requirements and procedures
- economic considerations and decisions
- insurance policies and considerations
- site closure procedures and the legislative implications
- de-briefing processes
- emergency incident management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation of emergency preparedness and response systems • implementation of procedures and techniques for the safe, effective and efficient implementation of emergency preparedness and response systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of option that best meet the required outcomes • working with others to undertake and complete the implementation of emergency preparedness and response systems • consistent successful implementation of emergency preparedness and response systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of emergency preparedness and response systems
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and

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	complete the implementation of emergency preparedness and response systems • provision of clear and timely required support and advice on the implementation of emergency preparedness and response systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Emergency preparedness and response systems is:	• a documented system for the control of emergencies and the resources put in place as a requirement of this system, including but not limited to:
	  • hazard identification and quantification
	  • risk assessment
	  • authority and responsibility
	  • controls established to manage identified risks
	  • reporting and communication
	  • document control
	  • audit and review
	• They may include procedures for:
	  • workplace atmosphere monitoring
	  • ventilation systems and usage
	  • inertisation techniques
	  • site plans
	  • trigger action response plans
	  • emergency procedures
	  • training and education
	  • liaison with external agencies

Communications may include:	• radio • telephone • telemetry • verbal

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	• written • computers • runners
Incidents may include:	• explosion • fire • roof fall • strata • inrush • outburst • irrespirable atmosphere • environmental incident • Hazchem • explosives • vehicle accidents • wall collapse • minor accident • major accident or fatality • underground explosion or fire • ignition • spontaneous combustion • surface fire which disrupts operations • bomb threat • terrorist attack • wind blast • failure of ventilation control devices/appliances
Operations facilities may include:	• operations centre • press room • mortuary • muster areas • meeting rooms • communications centres • networks
Required Services, **personnel**, **equipment and resources** may include:	• internet mine services and resources • contractors • insurance companies • suppliers • local community • manufacturers • inspectorate • police • mines rescue services

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	• fire brigades • ambulance • medical staff • hospital • critical incident stress debriefing organisations • local emergency management organisations • salvation army • clergy • state • federal and local government • media • coroner's representative • security services • solicitors • district check inspector • other sites • engineers • scientists • inertisation • down-hole camera • drill rigs • forensic
Equipment may include:	• rescue equipment • mining equipment • transport • specialised equipment from external sources • monitoring and analysis equipment
Post-incident actions may include:	• legal advice • environmental aspects • Critical Incident Stress Debriefing • interviewing • investigations • witness interview statements • restoration of normal operations • media releases • public relations • employee welfare and family support • security of evidence • liaison with statutory/legal bodies • statutory investigations • review of emergency procedures • documentation of ongoing operations

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	• restoration of emergency preparedness
Audit is:	• the process by which the validation of procedures, processes and systems are assured

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR504A Manage major incidents and emergencies

Modification History

Not applicable.

Unit Descriptor

This unit covers the management of major incidents and emergencies in resources and infrastructure industries. It includes: reviewing the systems; managing the incident and emergency response; accessing and responding to information, advice and support; applying post-incident management procedures; and auditing and reviewing the effectiveness of the incident and emergency management response.

Application of the Unit

This unit is appropriate for those working in management and technical specialist roles within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Review emergency preparedness and response systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to the management of major incidents and emergencies 1.2. Review the emergency preparedness plan and confirmed for relevance and timeliness on a regular basis 1.3. Review the organisational structure for the management of emergency preparedness and response for relevance and accuracy on a regular basis 1.4. Review emergency response procedures for management of classes of ***incident*** for relevance and accuracy on a regular basis 1.5. Confirm the emergency response procedures for management of decision-making processes and decision monitoring systems 1.6. Confirm plans with relevant ***stakeholders*** and specialists
2. Manage the incident/ emergency response	2.1. Access incident information receipt and recording systems in accordance with site requirements 2.2. Access and apply emergency response and evacuation plans and procedures in accordance with site requirements 2.3. Establish ***operations facilities***, including ***communications*** to support them, in accordance with the emergency plan 2.4. Apply action planning processes to manage the situation/incident in accordance with the emergency plan 2.5. Identify and apply ***required services***, personnel, ***equipment*** and ***resources*** for the incident in accordance with the emergency plan 2.6. Confirm and clarify roles and responsibilities, as specified in the emergency response and evacuation plans and procedures and communicated to all persons
3. Access and respond to	3.1. Bring together specialist technical and

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information, advice and support	professional staff to review the situation 3.2. Plans are developed to deal with ***immediate areas of concern*** 3.3. Clarify and confirm individual's roles and responsibilities
4. Apply post-incident management procedures	4.1. Determine and establish ***post-incident management*** processes to investigate nature and cause of situation/incident in accordance with ***statutory*** and site requirements
5. Audit and review the effectiveness of the incident/emergency management response	5.1. ***Audit*** response systems for effectiveness and compliance with statutory and management plan standards 5.2. Audit incident/emergency management response processes for effectiveness and for compliance with worksite requirements 5.3. Audit recording systems for effectiveness and for compliance with the emergency preparedness and response plan 5.4. Respond promptly to instances of non-compliance or other discrepancies/deficiencies revealed by audit and modify the incident/emergency management system accordingly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to manage major incidents and emergencies:

- apply legislative, organisation and site requirements and procedures
- access and apply worksite information and recording systems
- analyse information
- assess hazards and associated risks
- apply brainstorming to collect maximum information
- apply fault-tree analyses
- communicate effectively with members of the media
- communicate effectively with people personally or through technical devices during incidents
- delegate responsibility and tasks
- develop action plans
- apply effective interviewing techniques
- apply effective questioning techniques
- evaluate systems and equipment
- facilitate groups to work together
- apply procedures to formulate and develop emergency preparedness plans
- identify or establish worksite facilities for incident management
- make effective decisions
- apply procedures to organise personnel and resources
- participate as a team member
- read and interpret worksite plans
- write reports

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to manage major incidents and emergencies:

- audit review process and techniques
- call-out procedures
- classification of types of incidents
- decision making processes
- deployment of staff underground

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- economic considerations and decisions
- effects of heat and humidity
- effects of visibility
- emergency and disaster planning processes and techniques
- emotional effects of emergencies on rescuers and worksite personnel
- environmental risks and controls
- equipment handling
- equipment required for different types of emergency
- escape strategies and technology
- hazard identification
- incident resources and how to access them
- industry and legislative stakeholders
- insurance policies and considerations
- intervention and control techniques for heating, fires, explosions, outburst, extrication or inrushes
- legal implications of incidents
- legal requirements of incident management teams
- legislation applicable to worksites
- legislation regarding resumption of normal operations
- legislative requirements
- media policies and procedures
- worksite closure procedures and the legislative implications
- mine rescue guidelines and capabilities
- worksite-type incidents and risks
- numbers needed to run the worksite at planned operational levels
- rescue team structure, procedures and equipment, and standby team requirements
- risk management principles and techniques
- sealing procedures and the legislative implications
- self-escape philosophies, systems and equipment
- services and agencies available to assist in an emergency
- structure of emergency guidelines
- structure of emergency organisations
- structure, roles, capabilities and operational limitations of external resources and agencies used during worksites incidents
- support services role and access
- the requirements and structure for fresh air base/refuge chambers
- the role of stakeholders
- the techniques and equipment used for collecting and analysing atmospheric conditions
- titles and roles of members of incident management team
- training and assessment principles
- ventilation and its influence on incidents, and decisions to be made

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the management of major incidents and emergencies • implementation of procedures and techniques for the safe, effective and efficient management of major incidents and emergencies • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the management of major incidents and emergencies • consistent successful management of major incidents and emergencies
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the management of major incidents and emergencies
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and

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	complete the management of major incidents and emergencies • provision of clear and timely required support and advice on the management of major incidents and emergencies
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Types of **incidents** can be identified as:	• chemical injury • entrapment • equipment damage • fire • fugative chemicals • inundation • irrespirable atmosphere • personnel injury or death • rock fall • unscheduled explosion
Incidents can be caused by:	• aircraft accident • bulk-head collapse • explosives • flammable solids or liquids • Hazchem • inrush • mining induced subsidence • outburst • release of stored energy • seismic event • sulphide dust explosion • vehicle accidents • vehicle fire
Stakeholders and other consulting partners can include:	• ambulance • board of directors

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	• contractors • critical incident stress debriefing organisations • customers • emergency management and assistance organisations • employee representatives • employees • families • fire brigade • government mining authorities • hospital • insurance companies • local community • local government • manufacturers • medical staff • mines rescue service • police • specialist professionals • suppliers
Operations facilities are those which are set up to manage an incident and may include:	• operations centre • press room • mortuary • muster areas • meeting rooms
Communications may include:	• radio • telephone • telemetry • verbal • written • computers • runners • mirrors • signals • stench gas alarms/sirens
Required services may include:	• internal worksite services and resources • contractors • suppliers • local community • manufacturers • inspectorate • police

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	• mines rescue services • fire brigade • ambulance • medical staff • hospital • critical incident stress debriefing organisations • local emergency management organisations • local government • media • coroner's representative • security services • solicitors • workers' representatives • other worksites • experts such as engineers, scientists • down-hole camera • drill rigs • forensic
Equipment refers to that needed to control the incident and includes but is not restricted to:	• rescue equipment • mining equipment • transport • specialised equipment from external sources • monitoring and analysis equipment • breathing apparatus
Resources may include, but are not limited to:	• people • finance • equipment • environment • buildings/facilities • technology • information
Immediate areas of concern may include:	• employee welfare • dealing with the media • legal issues • environmental aspects • informing the community

Post-incident management is:	• the control of activities arising from an incident and can include:
	  • legal advice
	  • environmental aspects
	  • critical incident stress debriefing

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	• interviewing • investigations • witness interview statements • restoration of normal operations • media releases • public relations • employee welfare and family support • security of evidence • liaison with statutory/legal bodies • statutory investigations • review of emergency procedures • documentation of ongoing operations • restoration of emergency preparedness
Statutory requirements may include but are not limited to:	• common law • coroner • dangerous goods • development of training policies/programs to aid compliance • emergency services • environmental • explosives • gas and petroleum • industrial relations • local government • minerals and extractive industry licensing • mines act • navigation • planning and assessment • road traffic • safety and health • trade practices • waterways • weights and measures • workers compensation/WorkCover
Audit is:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

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Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR601A Establish and maintain mine emergency preparedness and response systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishing and maintaining of emergency preparedness and response systems in resources and infrastructure industries. It includes: establishing emergency preparedness and response systems and the organisation's emergency facilities, equipment and personnel; planning and preparing for the implementation of the emergency preparedness and response plans; establishing post-incident management procedures; and auditing and reviewing the emergency preparedness and response plan and equipment.

Application of the Unit

This unit is appropriate for those working in management and technical specialist roles within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish emergency preparedness and response systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to emergency preparedness and response systems 1.2. Identify the requirements of emergency preparedness and response systems in accordance with legislative and organisation's requirements 1.3. Design and develop the emergency preparedness plan from an analysis of all relevant technical and operational information 1.4. Design and develop an organisational structure for the management of emergency preparedness and response from an analysis of all relevant technical and operational information 1.5. Develop emergency response procedures for management of classes of ***incident*** from an analysis of all relevant technical and operational information 1.6. Establish emergency response procedures for management of decision-making processes and decision monitoring systems 1.7. Review the plan with relevant ***stakeholders*** and specialists 1.8. Establish a program, including systems and procedures, to satisfy identified organisation's emergency preparedness and response training requirements 1.9. Establish procedures to audit and review organisation's emergency preparedness and response compliance with statutory and organisation's requirements 1.10. Establish procedures for incorporating feedback into the audit/review system
2. Establish organisation's emergency facilities, equipment and personnel	2.1. Establish incident information receiver and recording systems in accordance with statutory and organisation's requirements 2.2. Establish emergency response and evacuation plans and procedures in accordance with ***statutory*** and

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	organisation's requirements 2.3. Establish ***operations facilities***, including ***communications*** to support them, in accordance with the emergency plan 2.4. Develop action planning processes to manage the situation/incident in accordance with the emergency plan 2.5. Identify required ***services***, personnel, ***equipment*** and ***resources*** for types of incidents in accordance with the emergency plan 2.6. Determine and establish documentation and reporting requirements in accordance with statutory and organisation's requirements
3. Plan and prepare for the implementation of the emergency preparedness and response plans	3.1. Identify and interpret the legislative and organisation's requirements related to emergency preparedness and response management 3.2. Access, interpret and clarify the emergency preparedness and response plans 3.3. Identify, clarify and communicate to all personnel roles and responsibilities, as specified in the emergency preparedness and response plans 3.4. Identify, forecast, obtain and allocate / schedule resources required for the implementation of the emergency preparedness and response plans 3.5. Implement the emergency preparedness and response training program 3.6. Develop review mechanisms to include suggestions and recommendations from both internal and external sources to facilitate ongoing improvement of emergency preparedness and response plans
4. Establish post-incident management procedures	4.1. Establish plans to manage post-incident actions in accordance with legislative and organisation's requirements 4.2. Establish processes to investigate nature and cause of situation / incident in accordance with legislative and organisation's requirements 4.3. Establish processes to evaluate the effectiveness of emergency response and

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	action plans to achieve objectives in accordance with legislative and organisation's requirements
5. Audit and review the emergency preparedness and response plan and equipment	5.1. ***Audit*** emergency preparedness and response monitoring systems for compliance with legislative and management plan standards 5.2. Audit emergency preparedness and response processes / resources for compliance with legislative and organisation's requirements 5.3. Audit recording systems for compliance with the emergency preparedness and response plan 5.4. Audit emergency preparedness and response training program for currency, relevance and compliance with the requirements of the emergency preparedness and response plan 5.5. Identify and correct non-compliance or other discrepancies/deficiencies revealed by audit

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain emergency preparedness and response systems:

- apply legislative, organisation and site requirements and procedures
- apply [procedures to formulate and develop emergency preparedness plans
- read and interpret site plans
- apply procedures to assess hazards and associated risks
- evaluate systems and equipment
- write reports
- identify or establish site facilities for incident management
- access and apply site information and recording systems
- communicate effectively with people personally or through technical devices during incidents
- apply procedures to organise personnel and resources
- apply procedures to handle members of the media
- develop action plans
- analyse information
- make effective decisions
- participate as team member
- facilitate groups to work together
- apply brainstorming to collect maximum information
- apply effective questioning techniques
- apply effective interview techniques
- delegate responsibility and tasks
- apply effective negotiation techniques
- apply incident investigation requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain emergency preparedness and response systems:

- mines rescue guidelines
- emergency response and disaster planning processes and techniques
- audit review process and techniques
- incident resources and how to access them

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- legislation applicable to sites
- training and assessment principles
- industry and legislative stakeholders
- site-type incidents and risks
- structure of emergency procedures guidelines
- legal requirements of incident management teams
- hazard identification
- self-escape, aided rescue and incident response philosophies, systems and equipment
- the techniques and equipment used for collecting and analysing atmospheric conditions
- risk management principles and techniques
- classification of types of incidents
- decision-making processes
- structure of emergency organisations
- structure, roles, capabilities and operational limitations of external resources and agencies used during site incidents
- rescue team structure, procedures and equipment and standby team requirements
- effects of heat and humidity
- effects of visibility
- escape strategies and technology
- environmental risks and controls
- media policies and procedures
- equipment required for types of emergency
- ventilation and its influence on incidents, and decisions to be made
- deployment of staff underground
- call-out procedures
- emotional effects of emergencies on rescuers, site personnel, families and community
- titles and roles of members of incident management team
- services and agencies available to assist in an emergency
- intervention and control techniques for heating, fires, explosions, outburst, extrication or inrushes
- the requirements and structure for fresh air base
- support services role and access
- legislation regarding resumption of normal operations
- the role of stakeholders
- numbers needed to run the site at planned operational levels
- mobilisation, deployment and utilisation of equipment
- economic considerations and decisions
- insurance policies and considerations
- site closure procedures and the legislative implications
- sealing procedures and the legislative implications

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- requirements for site security and access control

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishment and maintenance of emergency preparedness and response systems • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of emergency preparedness and response systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to undertake and complete the establishment and maintenance of emergency preparedness and response systems • consistent and timely completion of establishing and maintaining of emergency preparedness and response systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the establishment and maintenance of emergency preparedness

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	and response systems • provision of clear, timely required support and advice on the implementation of emergency preparedness and response systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Incident is an unplanned and undesirable event resulting in damage to property, environment or people and may include those caused by:	• explosion • fire • strata failure • inrush • outburst • irrespirable atmosphere • environmental incident • Hazchem • explosives • vehicle accidents • wind blasts • failure of ventilation control device/appliances • ignition of gas • situation where a hazard gets out of control
Types of incident may be identified as:	• minor accident • major accident or fatality • underground explosion or fire • ignition • outburst • spontaneous combustion • surface fire which disrupts operations • environment incidents • bomb threat • terrorist attack
Stakeholders are those parties	• shareholders

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who may be directly or indirectly affected by incidents and may include:	• board of directors • employees • unions • families • contractors • insurance companies • suppliers • local community • manufacturers • Inspectorate • Coal Services • police • Mines Rescue Service • fire brigades • ambulance • medical staff • hospitals • critical incident stress debriefing organisations • local emergency management organisations • Salvation Army • clergy • state, federal, local government
Operations facilities are those which are set up to manage an incident and may include:	• operations centre • press room • mortuary • muster areas • meeting rooms • communication centres • networks • control rooms
Communications may include:	• radio • telephone • telemetry • oral • written • computers • runners
Required services, **personnel**, **equipment and resources** may include:	• internal site services and resources • contractors • insurance companies • suppliers

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	• local community • manufacturers • Inspectorate • Coal Services • police • Mines Rescue Service • fire brigades • ambulance • medical staff • hospitals • critical incident stress debriefing organisations • local emergency management organisations • Salvation Army • clergy • federal, state and local government • media • coroner's representative • security services • solicitors • district check inspector • other sites • engineers • scientists • inertisation equipment • down-hole camera • drill rigs • forensic services
Equipment refers to that needed to control the incident and includes, but is not restricted to:	• rescue equipment • mining equipment • transport • specialised equipment from external sources • monitoring • analysis equipment • communication • computer systems • fire fighting equipment • inertisation equipment • extraction devices and equipment
Post-incident management is the control of activities arising from an incident and may include:	• legal advice • environmental aspects • critical incident stress debriefing • interviewing

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	• investigations • witness interview statements • restoration of normal operations • media releases • public relations • employee welfare and family support • security of evidence • liaison with statutory / legal bodies • statutory investigations • review of emergency procedures • documentation of ongoing operations • restoration of emergency preparedness systems • security systems
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Unit Sector(s)

Emergency Response and Rescue

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIERR602A Establish and maintain underground coal mine emergency preparedness and response systems

Modification History

Not applicable.

Unit Descriptor

This unit covers establish and maintain emergency preparedness and response systems in underground coal mines. It includes: establishing mine emergency preparedness and response systems and mine emergency systems; planning and preparing for the implementation of the plans; establishing post-incident management procedures; and auditing and reviewing the plan and equipment.

Application of the Unit

This unit is appropriate for those working in a management or technical specialist roles, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish mine emergency preparedness and response systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to emergency preparedness and response systems in underground coal mines 1.2. Identify the requirements of mine emergency preparedness and response 1.3. Design and develop the emergency preparedness plan from an analysis of all relevant technical and operational information 1.4. Design and develop an organisational structure for the management of emergency preparedness and response from an analysis of all relevant technical and operational information 1.5. Develop emergency response procedures for management of identified potential incident scenarios from an analysis of all relevant technical and operational information 1.6. Establish decision-making processes, operating protocols and information / communication control systems within the mine emergency preparedness and response procedures, including decision monitoring systems 1.7. Establish emergency preparedness and response ***maintenance program*** and procedures 1.8. Review the plan with relevant ***stakeholders*** and specialists 1.9. Establish a program, including systems and procedures, to satisfy identified mine emergency preparedness and response training requirements 1.10. Establish procedures that may include simulation events, to ***audit*** and review mine emergency preparedness and response compliance with legislative and site requirements 1.11. Establish procedures for incorporating feedback from site and

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	industry based learning's into the audit/review system
2. Establish mine emergency systems	2.1. Establish ***incident*** information, recording and reporting systems 2.2. Establish emergency response and evacuation plans and procedures 2.3. Establish ***operations facilities***, including ***communications*** to support them, in accordance with the emergency plan 2.4. Establish action planning processes to manage the situation / incident in accordance with the emergency plan 2.5. Identify required ***services***, ***personnel***, ***equipment and resources*** for ***types of incidents*** in accordance with the emergency plan
3. Plan and prepare for the implementation of the plans	3.1. Identify and interpret the legislative and site requirements related to emergency preparedness and response management 3.2. Access, interpret and clarify the emergency preparedness and response plans 3.3. Identify, clarify and communicate to all personnel roles and responsibilities, as specified in the emergency preparedness and response plans 3.4. Identify, forecast, obtain and allocate / schedule resources required for the implementation of the emergency preparedness and response plans 3.5. Implement the emergency preparedness and response training program 3.6. Develop review mechanisms to include suggestions and recommendations from both internal and external sources to facilitate ongoing improvement of emergency preparedness and response plans
4. Establish post-incident management procedures	4.1. Establish plans to ***manage post-incident*** 4.2. Establish processes to investigate nature and cause of situation / incident 4.3. Establish processes to evaluate the effectiveness of emergency response and action plans to achieve objectives
5. Audit and review the plan and equipment	5.1. Audit emergency preparedness and response monitoring systems for

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	compliance with legislative and management plan standards 5.2. Audit emergency preparedness and response processes / resources for compliance with legislative and mine site requirements 5.3. Audit recording systems for compliance with the emergency preparedness and response plan 5.4. Audit emergency preparedness and response training program for currency, relevance and compliance with the requirements of the emergency preparedness and response plan 5.5. Identify and correct non-compliance or other discrepancies/ deficiencies revealed by audit

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain emergency preparedness and response systems in underground coal mines:

- apply legislative, organisation and site requirements and procedures
- apply emergency response and disaster planning processes and techniques
- apply emergency procedures guidelines
- read and interpret mine plans
- apply procedures to assess hazards and associated risks
- evaluate systems and equipment
- write reports
- identify or establish mine-site facilities for incident management
- access and use mine-site information and recording systems
- apply effective communication techniques with people personally or through technical devices during incidents
- organise personnel and resources
- handle members of the media
- develop action plans
- analyse information
- apply effective decision making techniques
- participate as team member
- facilitate groups to work together
- brainstorm to collect maximum information
- apply effective questioning techniques
- apply effective interview techniques
- delegate responsibility and tasks
- apply effective negotiation techniques
- investigate incidents

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain emergency preparedness and response systems in underground coal mines:

- mines rescue guidelines
- emergency response and disaster planning processes and techniques
- audit review process and techniques

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- incident resources and how to access them
- legislation applicable to mines
- training and assessment principles
- industry and legislative stakeholders
- mine-type incidents and risks
- structure of emergency procedures guidelines
- legal requirements of incident management teams
- hazard identification
- self-escape, aided rescue and incident response philosophies, systems and equipment
- the techniques and equipment used for collecting and analysing atmospheric conditions
- risk management principles and techniques
- classification of types of incidents
- decision-making processes
- structure of emergency organisations
- structure, roles, capabilities and operational limitations of external resources and agencies used during mine incidents
- rescue team structure, procedures and equipment and standby team requirements
- effects of heat and humidity
- effects of visibility
- escape strategies and technology
- environmental risks and controls
- media policies and procedures
- equipment required for types of emergency
- ventilation and its influence on incidents, and decisions to be made
- deployment of staff underground
- call-out procedures
- emotional effects of emergencies on rescuers, mine personnel, families and community
- titles and roles of members of incident management team
- services and agencies available to assist in an emergency
- intervention and control techniques for heating, fires, explosions, outburst, extrication or inrushes
- the requirements and structure for fresh air base
- support services role and access
- legislation regarding resumption of normal operations
- the role of stakeholders
- numbers needed to run the mine at planned operational levels
- mobilisation, deployment and utilisation of equipment
- economic considerations and decisions
- insurance policies and considerations
- mine closure procedures and the legislative implications

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- sealing procedures and the legislative implications
- requirements for site security and access control

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining emergency preparedness and response systems in underground coal mines • implementation of procedures and techniques for the safe, effective and efficient establishing and maintaining of emergency preparedness and response systems in underground coal mines • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of options that best meet the required outcomes • working with others to establish and maintain emergency preparedness and response systems in underground coal mines • consistent and timely establishment and maintenance of emergency preparedness and response systems in underground coal mines
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain emergency preparedness and

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	response systems in underground coal mines • consistent and timely gaining of approval of emergency preparedness and response systems for underground coal mines • provision of clear, timely required support and advice on the implementation of emergency preparedness and response systems in underground coal mines
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Maintenance program is the confirmation of system and equipment operability and may include checks of:	• personal protection equipment (PPE) • signage • monitoring and alarms • mines rescue equipment • communication devices • guidance systems • provisions of plans, maps and documentation • escape and rescue equipment • first response equipment • escape routes • information technology (IT) systems
Stakeholders are those parties who may be directly or indirectly affected by incidents and may include, but are not limited to:	• shareholders • board of directors • employees • unions • families • contractors • insurance companies • suppliers • local community • manufacturers • Inspectorate • Coal Services • police • Mines Rescue Service

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	• fire brigades • ambulance • medical staff • hospitals • critical incident stress debriefing organisations • local emergency management organisations • Salvation Army • clergy • state, federal, local government
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Incident is:	• an unplanned and undesirable event resulting in damage to property, environment or people and may be caused by:
	  • explosion
	  • fire
	  • strata failure
	  • inrush
	  • outburst
	  • irrespirable atmosphere
	  • environmental incident
	  • Hazchem
	  • explosives
	  • vehicle accidents
	  • wind blasts
	  • failure of ventilation control device/appliances
	  • ignition of gas
	  • situation where a hazard gets out of control

Operations facilities are those which are set up to manage an incident and may include:	• operations centre • press room • mortuary • muster areas • meeting rooms • communication centres • networks • control rooms

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Communications may include:	• radio • telephone • telemetry • oral • written • computers • runners
Services, **personnel**, **equipment and resources** may include:	• internal mine services and resources • contractors • insurance companies • suppliers • local community • manufacturers • Inspectorate • Coal Services • police • Mines Rescue Service • fire brigades • ambulance • medical staff • hospitals • critical incident stress debriefing organisations • local emergency management organisations • Salvation Army • clergy • federal, state and local government • media • coroner's representative • security services • solicitors • district check inspector • other mines • engineers • scientists • inertisation equipment • down-hole camera • drill rigs • forensic services
Equipment refers to that needed to control the incident and includes:	• rescue equipment • mining equipment • transport

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	• specialised equipment from external sources • monitoring • analysis equipment • communication • computer systems • fire fighting equipment • inertisation equipment • extraction devices and equipment
Types of incident can be identified as:	• minor accident • major accident or fatality • underground explosion or fire • ignition • outburst • spontaneous combustion • surface fire which disrupts operations • environment incidents • bomb threat • terrorist attack
Post-incident management is the control of activities arising from an incident and may include:	• legal advice • environmental aspects • critical incident stress debriefing • interviewing • investigations • witness interview statements • restoration of normal operations • media releases • public relations • employee welfare and family support • security of evidence • liaison with statutory / legal bodies • statutory investigations • review of emergency procedures • documentation of ongoing operations • restoration of emergency preparedness systems • security systems

Unit Sector(s)

Emergency Response and Rescue

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIFIA401A Manage financial records

Modification History

Not applicable.

Unit Descriptor

This unit covers all components of quoting, invoicing and maintaining financial records.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare/receive invoices	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Estimate all ***job components*** accurately using company procedures 1.3. Follow company procedures for presentation of financial data and recording of quotations 1.4. Levy charges according to services, and render accounts to clients 1.5. Promptly and accurately prepare invoices to help ensure desired cash flow 1.6. Verify accounts received for accuracy and pay promptly
2. Maintain cost records	2.1. Follow office procedures for financial controls and accountability 2.2. Record all ***costs*** promptly, legibly and accurately
3. Prepare reports on variances from cost estimates	3.1. Analyse cost ***records*** to detect variances/reasons for variances 3.2. Compare final costing with original job tender 3.3. Prepare reports in accordance with organisation format
4. Monitor financial performance	4.1. Determine and maintain strategies for managing cash flow to monitor the relationship between budget/standard and actual performance 4.2. Determine and calculate cost to enterprise requirements 4.3. Complete reporting and pricing records in line with business policy 4.4. Produce financial reports in a clear and timely manner for distribution to relevant stakeholders

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to manage financial resources:

- apply communication skills to liaise with suppliers and end users of purchases
- apply literacy skills to identify financial information and the organisation's accounting procedures, document purchases, and write reports on financial activities
- apply information management and research skills to analyse and assess expenditure
- apply finance skills to maintain up to date records accurately and legibly
- apply data collection skills to identify and access financial data
- apply numeracy skills to calculate data and to reconcile figures
- interpret and balance a budget
- estimate and calculate time/costs of repairing, replacing and servicing equipment

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to manage financial resources:

- codes of ethics and conduct
- understanding of provisions of relevant legislation affecting business operations, codes of practice and national standards, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - financial legislation
  - occupational health and safety (OHS)
  - consumer protection legislation
  - contract law
  - Trade Practices Act
- organisation policy and procedures relating to:
  - service delivery, quotation and payment policies and procedures
  - standard contracting arrangements
- purchasing and procurement principles for:

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- accountability
- probity and transparency
- risk management
- value for money
- federal government taxes and charges
- equipment and ancillary attachment characteristics, technical capabilities and limitations
- wear parts and relative frequency of replacement
- purpose of stock control
- financial transactions such as cash flow and cost benefit analysis
- record keeping systems
- budgeting procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • organising financial data to highlight relevant features • presenting financial data in comprehensive format • knowledge of relevant legislation • preparation of timely and accurate reports in accordance with company requirements
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the management of financial resources

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • relevant state/territory environmental protection legislation • relevant state/territory OHS legislation • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Job components may include:	• wages • overheads • accommodation and travel • bank and other financial fees • office administration, accounting and purchasing • printing and stationery • accounting • vehicles and transport • purchased services on location • freight • communications (e.g. phone) • consumables • contractors • hire charges • GST
Information regarding **costs** may be obtained from:	• timesheets • log books • invoices • requisitions • quotations • petty cash records • bank and credit card statements

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Records may include:	• cash book • petty cash book • wages and salaries • paid purchase and service invoices • sales invoices • machine usage • consumables of fuel usage • parts usage

Unit Sector(s)

Financial Administration and Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIGOV201A Comply with site work processes/procedures

Modification History

Not applicable.

Unit Descriptor

This unit covers the compliance with site work processes/procedures in the resources and infrastructure industries. It covers the workers' contribution to planning, preparing for quality outcomes, application of site safety and health management systems to individual work activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work outcomes	1.1. Access, interpret and clarify ***relevant work procedures/standards*** 1.2. Identify and confirm ***roles and responsibilities*** for individual work with the appropriate persons 1.3. Prepare ***work plans*** that will ensure compliance with mine procedures and safe work outcomes
2. Apply work procedures to individual work activities	2.1. Carry out allocated work to site procedures/standards 2.2. Adjust and confirm on roles and responsibilities to meet changing circumstances personnel 2.3. Monitor work processes, report incidents and apply local risk control processes to minimise injury, loss, equipment damage and environmental harm, in accordance with site safety and health management system 2.4. Identify and report non compliance in the application of site procedures and recommend improvements to relevant site personnel 2.5. Complete ***relevant documentation*** in accordance with site requirements/standards

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following:

- access, interpret and apply site procedures/standards
- communicate effectively in the workplace
- monitor and recommend changes to overcome non compliance with site procedures/standards
- maintain relevant site documents and reports
- identify hazards in the workplace
- apply risk management practices

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, site work processes/procedures:

- site safety and health management systems
- work planning processes
- site and equipment safety requirements
- technical and operational capability and limitations of resources and equipment being used
- relevant safety and health legislation including obligations under duty of care

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for compliance with site work processes/procedures
	• implementation of requirements, procedures and techniques for the safe, effective and efficient application of site work processes/procedures, while complying with site risk management, safety, environmental and communication requirements, including:
	  • accessing, identifying and applying site procedures/standards
	  • identifying, agreeing and adjusting performance in line with potential changing circumstances
	  • planning and completing work to achieve agreed outcomes
	  • monitoring processes, reporting incidents and safely applying risk control processes to minimise injury, loss, equipment damage and environmental harm
	  • contributing to the site safety health management system
	  • completing required documentation

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to comply with site work processes/procedures

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant work procedures/standards may include:	• relevant legislation • relevant Australian standards relating to safety and health management systems • organisation or site policies, procedures and work instructions • safety and health management systems • principle hazard management plans • standard operating procedures • code of practice, recognised standards or guidelines • manufacturer's instructions • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Roles and responsibilities may include:	• identification of hazards • roles and responsibilities defined in site safety and health management systems • obligations and duties of care under safety legislation • criteria for evaluation of own work • measures to avoid injury and illness • criteria for measurement and minimisation of risk • processes to ensure "right first time" approach • adherence to relevant work procedures
A work plan:	• is the plan of routine or non-routine activities which may or may not be documented • may be SLAMS (Stop, Look, Assess, Manage)
Relevant documentation may include:	• site based incident reporting forms • safe work guidelines or work instructions • risk based self check lists • hazard reporting systems

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Unit Sector(s)

Governance and Compliance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIGOV401B Apply, monitor and report on compliance systems

Modification History

Not applicable.

Unit Descriptor

This unit covers applying, monitoring and reporting on compliance systems in the resources and infrastructure industries. It includes identifying, sharing, planning and implementing legislation, codes, standards and business requirements; and monitoring, revising and reporting performance to ensure legal and contractual compliance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify, share and implement legislation, codes, standards and business requirements	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity including ***workplace legal compliance*** 1.2. Provide information in a language, style and format which is understood by colleagues 1.3. Clarify implications of non-compliance to all in the workplace
2. Plan and implement legislation, codes, standards and business requirements	2.1. Plan systems of work with colleagues to ensure compliance with ***legislation***, ***codes***, ***standards and business requirements*** 2.2. Implement systems of work with work colleagues to ensure compliance with legislation, codes, standards and business requirements 2.3. Identify and support training needs of colleagues while managing the ***legal rights and responsibilities of the enterprise*** in which they work
3. Monitor, revise and report performance to ensure legal and contractual compliance	3.1. Identify, revise and report actual and potential problems promptly to ensure legal and contractual compliance within the workplace 3.2. Manage activities to ensure maximum legal and contractual compliance resulting in the protection of business interests 3.3. Submit recommendations on improvements to comply with legal and contractual requirements 3.4. Secure contractual procurement rights for goods and services and support a business plan that is shared with all members of the workplace 3.5. Maintain systems, records and reporting procedures
4. Investigate and report non-compliance	4.1. Investigate and deal with non-compliance according to legislative requirements and enterprise policies and procedures 4.2. Identify training needs and support the training of colleagues in the acquisition of competencies to meet legal requirements

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	and the associated standards 4.3. Implement training programs and workplace practices to ensure that non-compliance is not repeated

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to apply, monitor and report on compliance systems:

- apply legislative, organisation and site requirements to compliance systems
- display effective communication skills to report, consult and negotiate processes that satisfy legal requirements
- display time management skills to prioritise tasks and meet targets
- provide coaching and mentoring support
- identify and clearly communicate key compliance issues

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to apply, monitor and report on compliance systems:

- national, state/territory and local government legislative requirements affecting business operation, especially in regard to:
  - anti-discrimination
  - relevant OHS requirements
  - environmental issues
  - EEO
  - industrial relations
- business registration and licensing requirements
- legal rights and obligations of alternative ownership structures
- relevant taxation and related legislative requirements and legal rights and responsibilities related to the business
- bookkeeping and record keeping procedures to meet minimum financial and legal requirements
- award and enterprise agreements, where required
- industrial law relevant to recruitment and dismissal of employees
- creation and termination of relevant legal contracts
- duty of care imposed by the Law of Torts
- work procedure/instruction writing in compliance with legal requirements and company policy

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying, monitoring and reporting on compliance systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of compliance system requirements • working with others to plan, prepare and conduct compliance system requirements • evidence of the consistent successful application, monitoring and reporting on compliance systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment must sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application, monitoring and reporting on compliance systems
	  • provision of clear and timely instruction and supervision in the application, monitoring and reporting on compliance systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • legislation, codes, standards and business requirements relevant to the creation and maintenance of workplace legal compliance • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Workplace legal compliance may include:	• requirements for the maintenance and confidentiality of records of non-compliance • requirements for the maintenance of records of breaches • provision of information and training • regulations and code of practice relating to hazards present in work area • site/work/groups representatives and committees • issue resolution
Legislation, **codes**, **standards and business requirements** may include:	• OHS • business registration • taxation • legal • insurance • environmental • business structure
Legal rights and responsibilities of the enterprise may include:	• marketing the business in accordance with consumer legislation • operating the business with a duty of care (Law of Torts) • obligations imposed by choice of business structure

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Unit Sector(s)

Governance and Compliance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIGOV501A Identify, implement and maintain legal compliance requirements

Modification History

Not applicable.

Unit Descriptor

This unit covers the identification, implementation and maintenance of legal compliance requirements in the resources and infrastructure industries. It includes providing information about the scope, implementation, management, prioritisation and training for legal compliance requirements. It also provides information about implementing and monitoring procedures for maintaining legal records and for dealing with non-compliance events. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Provide information about the scope of legal and organisational compliance procedures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Explain relevant provisions of ***legislation and code of practice relevant to the workplace*** and how they impact on business arrangements 1.3. Provide information on the organisation's policies, procedures, programs and business arrangements within the ***legal compliance*** context 1.4. Evaluate, provide information and ***documentation*** to the work group regarding legal compliance 1.5. Obtain approval of plans from relevant personnel
2. Implement and monitor organisation's procedures for the management of legal compliance	2.1. Implement and monitor ***legal compliance management systems*** and procedures to maximise compliance opportunities 2.2. Search for, identify, review and report on legal compliance requirements regularly so issues may be raised and dealt with in a prompt and appropriate manner 2.3. Identify and periodically review if adequate ***resources*** have been allocated to implement legal compliance and inform appropriate parties promptly 2.4. Ensure all members of the workgroup have the opportunity to contribute to issues on legal compliance and ensure information is stored and reviewed within the organisation
3. Implement, monitor and prioritise compliance requirements within organisational procedures	3.1. Collect and review information on legal compliance and report any existing or potential non-compliance issues so they can be addressed appropriately 3.2. Evaluate and clarify compliance information to all relevant personnel 3.3. Identify implications of non-compliance 3.4. Group legal compliance requirements into critical, important and incidental classifications so that non-compliance issues can be prioritised and appropriate

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	measures implemented to prevent or minimise reoccurrence of non-compliance
4. Implement, monitor and document procedures and training for compliance requirements	4.1. Identify, implement, monitor and provide documentation on training needs and workplace procedures to ensure compliance 4.2. Monitor and report to relevant personnel ***legal compliance measures*** to ensure legal compliance is part of the organisation's general training program 4.3. Implement appropriate legal compliance training programs in ***consultation*** with relevant personnel 4.4. Identify and report inadequacies in existing legal compliance measures and resource allocation to ***management***
5. Implement and monitor procedures for maintaining legal records and for dealing with non-compliance events	5.1. Implement workplace procedures to deal with non-compliance events in a timely manner while keeping ***accurate legal records*** 5.2. Identify and investigate the cause of non-compliance events using the work areas records in accordance with investigation procedures 5.3. Minimise recurrence of non-compliance by using systems for reporting maintenance of legal compliance

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to identify, implement and maintain legal compliance including:

- apply legislative, organisation and site requirements and procedures for identification, implementation and maintenance of legal compliance requirements
- maintain legal and organisational compliance procedures and policies
- use effective consultative mechanisms to negotiate compliance processes and procedures appropriate to statutory/legal requirements
- explain complex compliance information to relevant personnel
- provide coaching and mentoring support to encourage compliance
- read, interpret and apply compliance legislation
- relate to people from a range of social, cultural and ethnic backgrounds
- source information on compliance requirements
- organise and review information on compliance requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, implementation and maintenance legal compliance requirements including:

- legal compliance rights
- environmental compliance requirements
- compliance insurance requirements
- contractual rights and responsibilities
- record-keeping systems required for compliance management
- complaints handling systems
- continuous improvement processes for compliance including:
  - monitoring
  - reporting
  - evaluation
  - review
- relevant Australian and international standards including but not limited to:
  - AS 3806: Compliance Programs
  - AS 4269: Complaints Handling
  - A/NZS 4360: Risk Management
  - AS ISO 15489: Records Management

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- relevant organisation policies and procedures including:
  - policies in various compliance areas
  - organisational standards for operations and ethics

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for identifying, implementing and maintaining legal compliance requirements • implementation of procedures and techniques for the safe, effective and efficient identification, implementation and maintenance of legal compliance requirements • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of legal compliance requirements that best meet the required outcomes • working with other to undertake and complete the identification, implementation and maintenance of legal compliance requirements • consistent successful identification, implementation and maintenance of legal compliance requirements
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge in undertaking the identification, implementation and maintenance of legal compliance requirements
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of legal compliance requirements that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the identification, implementation

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	and maintenance of legal compliance requirements • provision of clear and timely required support and advice on the legal compliance requirements
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• organisation and site requirements and procedures
	• manufacturer's guidelines and specifications
	• Australian standards
	• award and enterprise agreements and relevant industrial instruments
	• relevant legislation from all levels of government that affects business operation, especially in regard to:
	  • OHS
	  • environmental issues
	  • equal opportunity
	  • industrial relations
	  • anti-discrimination
	• relevant industry code of practice
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Legal compliance may include:	• waterways • workers compensation/work cover • planning and assessment • local government • licensing requirements • duty of care • environmental • industrial relations • navigation • EHS Management System • policy • standards • procedures • databases • decision making • reviews

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	• conventions • making permanent changes • maintenance of records of legal breaches • provision of information and training • regulations and code of practice relating to legal compliance • site representatives and committees • issue resolution • business registration • license to practice • industrial • fire • superannuation • partnership agreement • insurance • constitution documents • Acts • tender documents • financial documentation • development and implementation of compliance training measures
Documentation may include:	• legislation • code of practice • organisation's policies/procedures • statutory and regulatory requirements • legal compliance
Legal compliance management systems may include:	• work schedules - shift work and varying hours of duty • environments from simple to complex and diverse • appropriate policies, guidelines and processes • autonomy, from limited to substantial • quality and continuous improvement processes and standards • business plans • performance plans • ethical standards established by the organisation • productivity and profitability objectives and targets • best practice and benchmarking principles • legislation, codes and practices • resource parameters which may be defined or

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	negotiated
	• training and development principles and practices
	• human resource policies and practices including:
	  • interviewing
	  • counselling
	  • dispute resolution
	  • discipline
	• financial accountability including:
	  • profit and loss statements
	• enterprise/industrial agreements/awards
	• operations of a particular section or organisational unit
	• full range of operations of an organisation at a particular site
	• full range of operations of an organisation distributed across multiple sites
	• full range of operations of an organisation including mobile units such as the following:
	  • vehicles
	  • railway trains
	  • maritime vessels
	  • aircraft

Resources may include:	• Acts • legislation/regulations • information • Common Law • the community
Legal compliance measures may include:	• development of training programs • implementation of training programs
Consultation may include with:	• regulatory authorities • tenderers • project managers • contractors • employees • community • customers • suppliers
Management may include:	• leader/coach • facilitator

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	• mentor • participant • director • trainer • assessor
Accurate legal records may include:	• statutory/legal records • training needs • resource allocation • OHS • financial • personnel • taxation

Unit Sector(s)

Governance and Compliance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIGOV601A Establish, maintain and develop a statutory compliance management system

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment, maintenance and development of a statutory compliance management system in the resources and infrastructure industries. It includes planning, establishing, maintaining, monitoring and reviewing a compliance management system, consultation and audit procedures, feedback procedures and auditing systems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, establish and maintain compliance management framework	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Document the collaborative development of policies and objectives with relevant personnel that express the organisation's commitment to ***statutory compliance*** management 1.3. Establish and implement the framework for the statutory compliance management system 1.4. Determine the scope of proposed ***compliance requirements*** in ***consultation*** with relevant personnel and ***resources*** and integrate statutory compliance to all relevant job descriptions and procedures 1.5. Document the consultation process and explain information on the ***statutory compliance system*** and procedures ensuring this information is readily accessible to all ***relevant stakeholders*** 1.6. Prepare ***plan*** for the development of compliance requirements 1.7. Identify and maintain resources required to support the plan and gain approval for the statutory compliance management system plan from relevant personnel
2. Establish and monitor consultation and audit procedures with relevant stakeholders	2.1. Identify relevant stakeholders and develop and document ***system procedures*** to maximise opportunities for implementation of compliance 2.2. Consult with relevant stakeholders and monitor reports on compliance requirements and audit procedures to maximise opportunities for identifying existing and potential non-compliance 2.3. Summarise the findings from consultation with relevant stakeholders and develop procedures for monitoring, reviewing and auditing in a supportive environment 2.4. Monitor existing compliance measures in the initial draft report and submit to the ***development team*** for consideration

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	ensuring amendments maintain opportunities for regular audits and reporting 2.5. Complete and retain statutory compliance documentation for review and any necessary relevant action 2.6. Identify and report inadequacies in resource allocation for the implementation of compliance requirements in accordance with the organisation and relevant legislative requirements
3. Establish and monitor procedures for obtaining feedback on statutory compliance procedures	3.1. Establish measures to maximise compliance by validating processes in collaboration with a sample of relevant stakeholders in accordance with established project methodology 3.2. Disseminate to a sample of relevant stakeholders the draft compliance requirements 3.3. Collate, interpret and analyse feedback received on the draft compliance requirements and use it to develop a system procedures for ongoing treatment of compliance by integrating compliance requirements within general systems of work and procedures 3.4. Summarise, organise and monitor outcomes of the feedback process in preparation for the editing of the draft compliance requirements to be adopted throughout the area of managerial responsibility 3.5. Incorporate system procedures in consultation with ***authorised personnel*** from within the organisation and from appropriate statutory bodies when reviewing the documentation and presentation of compliance requirements
4. Establish, maintain and review a statutory compliance auditing system	4.1. Establish and monitor the system for keeping statutory compliance records that allow identification of compliance patterns 4.2. Assess the effectiveness of the statutory compliance system according to organisational aims and ***legislation***, ***codes and national standards*** relevant to the

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	workplace 4.3. Apply auditing procedures in a supportive environment to maximise compliance with legislation, codes and national standards relevant to the workplace

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to establish, maintain and develop a statutory compliance management system:

- apply legislative, organisation and site requirements and procedures for a statutory compliance management system
- research to:
  - conduct compliance literature and web searches
  - conduct surveys to obtain input and feedback on compliance requirements
  - analyse and organise collected information
- provide feedback on compliance requirements using appropriate techniques
- apply project management skills to:
  - develop project plans
  - manage other personnel involved in the project
  - manage time
  - manage finances
- read, interpret and apply:
  - compliance legislation
  - technical compliance related information
  - compliance rules
  - compliance procedures
  - compliance regulations
- develop and maintain compliance procedures and policies
- facilitate and document compliance management planning
- maintain compliance records and documents
- monitor and decide on changes to compliance processes
- provide leadership and guidance for compliance group activities
- provide coaching and mentoring support
- actively encourage the free exchange of compliance information
- display advanced negotiation skills

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to establish, maintain and develop a statutory compliance management system:

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- organisation's compliance policies, goals and objectives
- legislative compliance requirements
- action planning methods
- human resource management processes
- method of identifying appropriate compliance action based on cost, safety, and welfare issues
- compliance work procedure/instruction writing
- reporting and recording compliance procedures
- worksite compliance operating procedures
- hazard identification processes
- risk assessment processes
- risk treatment processes
- compliance documentation methods
- project methodology aimed at the development and creation of compliance requirements either as part of broader regulations, license requirements, or internal standards, code of practice, procedures and policies
- sources of data relevant to compliance requirements
- relevant Australian and international standards including:
  - AS 3806: Compliance Programs
  - AS 4269: Complaints Handling
  - A/NZS 4360: Risk Management
  - AS ISO 15489: Records Management
- specification of compliance management function
- compliance accountabilities and responsibilities within the organisation
- compliance related management information systems
- breach compliance management policies and processes
- compliance reporting procedures
- corporate induction and training processes related to compliance management
- continuous improvement processes for compliance including strategies for development of a positive compliance culture within the organisation
- relevant organisational policies and procedures such as compliance plans and policies in various areas and organisational standards for operations and ethics

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing, maintaining and developing a statutory compliance management system • implementation of procedures and techniques for the safe, effective and efficient development of a statutory compliance management system • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of a statutory compliance management system that best meet the required outcomes • working with other to undertake and complete the establishment, maintenance and development of a statutory compliance management system • consistent successful establishment, maintenance and development of a statutory compliance management system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical

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	resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the establishment, maintenance and development of a statutory compliance management system
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of a statutory compliance management system that best meet the required outcomes
	  • consistent achievement of required

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	outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the establishment, maintenance and development of a statutory compliance management system
	  • provision of clear and timely required support and advice on the statutory compliance management system

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Statutory compliance may include:	• trade practices • weights and measures • waterways • workers compensation • work cover • planning • assessment • local government • dangerous goods • minerals and extractive industry licensing • navigation • Mines Act • Common Law • development of training policies/programs to aid compliance • maintenance of all records regarding compliance incidents • information sharing • regulations and code of practice relating to compliance • site representatives and committees • issue resolution
Compliance requirements may include:	• cross-industry, industry-specific and internal organisational compliance requirements • appropriate training for those who have responsibilities within the statutory compliance management system

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	• interim solutions when a permanent measure is not immediately practical when treating a non-compliance
	• procedures for issue resolution
	• external authorities such as state, national and/or international:
	  • regulatory authorities
	  • licensing authorities
	  • professional associations and institutes
	  • government departments
	  • standards authorities
	  • educational institutions and organisations
	• internal authorities of an organisation such as:
	  • chief executive officer
	  • senior managers
	  • compliance manager
	  • internal audit manager
	  • quality control manager

Consultation may include:	• regulatory authorities • project managers • employees • community • customers • tenderers • suppliers • contractors
Resources may include:	• people • finance • buildings • facilities • technology • information
Statutory compliance system may include:	• establishing, maintaining and developing the management system's framework and participative arrangements • procedures for identifying non-compliance, treating compliance and controlling statutory compliance • organisational procedures for statutory compliance • statutory compliance records system • evaluation of the system and related policies

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	• procedures, standards or code of practice and programs • policies, programs and records
Relevant stakeholders may include:	• chief executive officer • board of directors • senior management team • frontline managers • compliance management team • compliance specialists at the management level • compliance specialists at the operational level • representatives of relevant authorities with an interest in the compliance requirements • chief executives and managers in organisations with an interest in the compliance requirements being developed • representatives of professional associations and institutes relevant to the compliance requirements being developed • legal and business advisors and consultants with expertise and interest in compliance requirements and related management systems
Plan may include:	• details of the objectives and deliverables • methodology • timelines and milestones • costs • personnel required who may be consulted during the course of the project activities
Project methodology may include:	• literature searches including web searches • environmental scans • interviews, focus groups, questionnaires • desk analysis • validation interviews • workshops • surveys
System procedures may include:	• identification of hazards • risk identification • risk assessment • risk treatment • interim solutions • dealing with unplanned incidents and events • consultation • communication

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	• monitoring • review • record keeping • reporting • training
Development team may include:	• project manager • team members • steering or advisory committee • reference panels • internal and external consultants and advisors
Authorised personnel may include:	• project manager • project steering committee • chief executive officer • manager • nominated representative of a regulatory authority • nominated representative of a statutory standards authority • nominated representative of a professional association or institutes • nominated representative of an educational institution or organisation

Legislation, **codes and national standards relevant to the workplace** may include:	• award and enterprise agreements and relevant industrial instruments
	• relevant legislation from all levels of government that affects business operation, especially in regard to:
	  • OHS
	  • environmental issues
	  • equal opportunity
	  • industrial relations
	  • anti-discrimination
	  • relevant industry code of practice
	  • AS 3806: Compliance Programs
	  • AS 4269: Complaints Handling
	  • A/NZS 4360: Risk Management
	  • AS ISO 15489: Records Management

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Unit Sector(s)

Governance and Compliance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN201A Operate a forklift

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of a forklift in the resources and infrastructure industries. It includes planning and preparing for forklift operations, operating a forklift and carrying out operator maintenance. The work required in this unit relates to the National Standard for High Risk Work. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for forklift operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements and briefings*** before proceeding 1.3. Fit and remove ***forklift attachments*** 1.4. Coordinate activities with others at the site prior to commencement of, and during, the work activity
2. Operate forklift	2.1. Carry out pre-start, start-up, park-up and shutdown procedures 2.2. Monitor and anticipate traffic flow and work area conditions to facilitate safe operations and to ensure the most efficient route of travel is selected and used 2.3. Manoeuvre and position forklift smoothly 2.4. Secure, lift, transfer and place load 2.5. Use forklift attachments in accordance with manufacturer specifications and site requirements 2.6. Act on or report monitoring systems and alarms 2.7. Recognise and respond to ***site hazards*** and emergency situations 2.8. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment
3. Carry out operator maintenance	3.1. Carry out forklift inspections and fault finding in accordance with manufacturer instructions and site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks 3.3. Carry out minor ***maintenance*** 3.4. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate a forklift:

- apply legislative, organisation and site requirements and procedures for the operation of a forklift
- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply hand-eye coordination in the control of forklift
- use relevant hand tools
- apply diagnostic techniques
- apply site environmental constraints
- dispose of environmentally sensitive oils, fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate a forklift:

- site and equipment safety requirements
- forklift equipment characteristics, technical capabilities and limitations
- forklift operational procedures
- forklift maintenance systems and procedures
- basic geological and survey data related to forklift operations
- site environmental requirements and constraints related to forklift operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating a forklift • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of a forklift • working with others to undertake and complete the operation of forklifts that meet all of the required outcomes • consistent timely completion of forklift operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of forklifts

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Forklifts may include:	• diesel • gas • electric
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • legislation and regulations • management plans • OHS policy • relevant code of practice • manufacturer's instructions • safe working or job procedures or equivalents • site requirements • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements and briefings may include:	• shift briefings • handover details • work orders • nature and scope of tasks • details and loads • achievement targets • working conditions • site lighting arrangements • defects of equipment • hazards and potential hazards • coordination requirements/issues
Forklift attachments may include:	• tyre handler • lifting device • slipper forks
Site hazards may include:	• power lines • trees

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	• overhead service lines • bridges • surrounding buildings • obstructions • structures • facilities • other equipment • dangerous material • earthworks • underground services
Operator maintenance are those:	• established and authorised for the site

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN202A Handle and store cargo

Modification History

Not applicable.

Unit Descriptor

This unit covers handling and storing cargo in the resources and infrastructure industries. It includes preparing equipment, handling and storing cargo, and handling and storing bulk cargo. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare equipment	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain operational instructions and ***shift briefing*** details and organise the work to be carried out accordingly 1.3. Clarify ***difficulties*** in carrying out the instructions with relevant personnel 1.4. Confirm availability and status of necessary permits 1.5. Confirm availability of necessary auxiliary ***equipment*** 1.6. Identify errors, omissions and shortages and take appropriate ***remedial action*** within functional responsibility 1.7. Use equipment, tools and ***communications*** suitable for the job and the environment 1.8. Prepare storage area for cargo arrival
2. Handle and store cargo	2.1. Comply with safe working practices, safety and operational requirements 2.2. Handle ***cargo*** using safe handling techniques 2.3. Provide assistance with crane operations 2.4. Pack and unpack containers 2.5. Check cargo using marks, numbers, quantities/weights, to ensure correct identification 2.6. Identify and report faults and take appropriate remedial action within functional responsibility 2.7. Store equipment and cargo safely and securely in the designated location according to operational requirements
3. Handle and store bulk cargo	3.1. Carry out bulk cargo transfer 3.2. Monitor transfer of cargo 3.3. Identify and report faults accurately and take appropriate remedial action within functional responsibility
4. Assist with crane operations	4.1. Use appropriate signals to direct movement of loads

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	4.2. Identify and report faults and take appropriate remedial action within functional responsibility 4.3. Relay information to crane operator in accordance with operational requirements

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.
Required skills
Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to handle and store cargo: • apply legislative, organisation and site requirements and procedures for handling and storing cargo • implement safe working limits when handling and lifting cargo • assess, interpret and apply information including technical information
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to handle and store cargo: • OHS obligations • company and statutory guidelines, procedures and practices • safe lifting and handling techniques • slinging requirements • permit to work system • operational requirements and principles of equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to handle and secure cargo • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of handling and securing cargo • working with others to undertake and complete handling and securing cargo that meets all of the required outcomes • consistent timely completion of handling and securing cargo that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the handling and securing of cargo

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements and procedures, including:
	  • (PSLA) Petroleum Submerged Lands Act
	  • duty of care
	  • petroleum regulations
	  • company requirements
	  • client requirements
	  • permits
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and Workplace Relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Shift briefings may include:	• safety briefing/induction • pre-tour safety meeting • weekly safety meetings • Job Safety Analysis (JSA)
Difficulties may include:	• unclear instructions • imprecise details • lack of information
Equipment may include:	• hoses • pumps • transfer equipment • slings • shackles • specialist handling equipment
Remedial action taken to deal with errors, omissions and shortages may include to:	• report • record • rectify • repair • adjust • replace

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Communications may include:	• 2-way radio • hand signals • telephone • public address system • written work instructions
Cargo may include:	• fluids • powder • containers • restrained palletised • loose palletised • tubulars

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN203A Conduct lifting operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of lifting operations in the resources and infrastructure industries. It includes planning for lifting, preparing for lifting and moving loads. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for lifting	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm work requirements in the form of ***shift briefings***, handover details or work orders before proceeding 1.3. Develop a ***preliminary lifting plan*** taking account of essential information 1.4. Check and confirm job feasibility and schedule with the load designer and other relevant persons 1.5. Confirm hazards associated with the use of cranes and other load moving equipment and identify and check measures to eliminate or control these hazards with appropriate parties 1.6. Finalise and confirm lifting plan, including the scheduling of required resources
2. Prepare for lifting	2.1. Identify, select, inspect, assemble and certify ***lifting equipment***, ***materials and tools*** required for the plan 2.2. Label unserviceable equipment, materials and tools
3. Move loads	3.1. Deduce and confirm appropriate safe working loads and centre of gravity using load charts and sling tags/charts prior to load moving 3.2. Direct the movement of the load using standard ***signals for load moving*** 3.3. Perform load moving in accordance with the plan 3.4. Perform work safely 3.5. Connect lifting gear to load 3.6. Connect load to movement device using appropriate and certified equipment 3.7. Ensure stability of the load by application of load movement procedure, temporary bracing and/or load support 3.8. Follow appropriate specifications during the placement and securing of the load

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct lifting operations:

- apply legislative, organisation and site requirements and procedures for the conduct of lifting operations
- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply diagnostic techniques
- use relevant hand tools
- identify hazards

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct lifting operations:

- appropriate approved scheme of training
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- hand signals
- potential hazards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of lifting operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of lifting operations • working with others to undertake and complete lifting operations that meet all of the required outcomes • consistent timely completion of the conduct of lifting operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete lifting operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • management plans • manager's rules • OHS policy • code of practice • manufacturer's instructions • safe working or job procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Shift briefings may include:	• site plans and drawings • work specifications • basic working plans and material schedules • the confirmed mass and dimensions of loads • capacities and availability of load shifting equipment
Preliminary lifting plan may include:	• confirmed details of lifting and slinging requirements • confirmed dimensions • site access and egress • suitability and availability of materials • tools and equipment • identification of potential hazards • probable control measures • identification of site coordination requirements
Lifting equipment, **materials and tools** may include:	• slings • ropes • shackles and eye-bolts • motive power including: • overhead

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	• vehicle loading cranes • non-slewing cranes
Signals for load moving are to include:	• those that are communicated verbally and with hand signals, to Australian standards

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN204A Load and unload cargo/goods

Modification History

Not applicable.

Unit Descriptor

This unit covers the loading and unloading of cargo/goods in the resources and infrastructure industries. It includes preparing for loading activities, loading goods/cargo, securing goods/cargo, protecting goods/cargo, conducting housekeeping activities, and unloading goods/cargo. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for loading activities	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel and plant
2. Load goods/cargo	2.1. Identify load characteristics and use appropriate loading techniques to safely and efficiently move load 2.2. Identify hazardous and dangerous goods and adhere to relevant legislation and permit requirements 2.3. Assess and ensure that load characteristics and transport capacity meet approved parameters 2.4. Erect physical barricades and signage to prevent unauthorised entry to the area 2.5. Load ***goods***/***cargo*** in accordance with relevant mass and loading regulations and site procedures
3. Secure goods/cargo	3.1. Check the distribution of the load to ensure it is even, legal and within safe working capacity 3.2. Secure load at approved anchorage points 3.3. Adjust load restraint devices to ensure load is secure during ***transport*** 3.4. Protect load from weather conditions using approved coverage devices

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4. Protect goods/cargo	4.1. Inspect the load for security to travel 4.2. Complete all required documentation
5. Conduct housekeeping activities	5.1. ***Clean*** equipment to maintain condition of equipment and ensure safe and efficient operations 5.2. Clean and store auxiliary service equipment 5.3. Control and report hazards to maintain a safe working environment
6. Unload goods/cargo	6.1. Assess location, stowage and remaining load before commencement 6.2. Unload in a safe and effective way making use of lifting aids and applications if required 6.3. Identify any goods requiring special handling 6.4. Relocate material in a manner that considers the heights, weight loading, size and crushability of the goods/cargo

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to load and unload goods/cargo:

- apply legislative, organisation and site requirements and procedures for loading and unloading goods/cargo
- apply safe driving techniques
- identify hazards
- handle hazardous goods
- interpret plans, reports, maps, specifications
- apply lifting techniques (manual, cranes and loads)
- monitor operations
- report defects
- apply safe work practices
- use hand and power tools
- read and comprehend simple statements in English
- identify containers and goods coding, ADG and IMDG markings and, where applicable, emergency information panels and take appropriate action

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to load and unload cargo/goods:

- relevant Australian standards and regulations including state/territory mass and loading regulations
- Australian and international regulations and code of practice for the handling and transport of dangerous goods and hazardous substances
- breakdown procedures
- bund construction and maintenance procedures
- contaminant identification and control
- approved dust suppression and extraction methods
- drainage principles
- hauling procedures
- emergency procedures
- environmental procedures
- equipment processes, technical capability and limitations

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- equipment safety requirements
- hazardous goods procedures and consequences of spills
- identifying repair requirements
- isolation procedures
- site operational system
- night and day working procedures
- relevant OHS procedures
- operational procedures and checks
- road rules
- signage erection procedures
- site procedures
- site safety requirements
- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for loading and unloading cargo/goods • implementation of requirements, procedures and techniques for the safe, effective and efficient loading and unloading cargo/goods • working with others to undertake and complete the loading and unloading cargo/goods that meet all of the required outcomes • consistent timely loading and unloading cargo/goods that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the loading and unloading cargo/goods

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements and procedures relating to:
	  • worksite safety and health
	  • mine inspection
	  • OHS
	  • explosives
	  • dangerous goods code
	  • HAZCHEM
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• materials handling equipment (e.g. turn tables, conveyors) • mobile equipment • mobile lifting equipment (e.g. cranes, forklifts)
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • fluid levels • job requirements • personnel • walk through site
Environmental issues may include:	• drainage • dust • ventilation • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills

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	• waste management and disposal • water quality
Goods/**cargo** may include:	• equipment • tools • zinc ingots • cadmium • CuSO4 • acid • secondary leach residue (SLR) • gypsum • paragoethite
Transport may include:	• aircraft • light vehicles • pipelines • rail • ship • truck
Clean may include methods such as:	• forced air • hosing with water • suction

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN205A Secure cargo

Modification History

Not applicable.

Unit Descriptor

This unit covers securing cargo in the resources and infrastructure industries. It includes preparing to secure cargo/containers, lashing and unlashing cargo, protecting cargo from weather, packing and unpacking cargo. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to secure cargo/containers	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Prepare and maintain ***work area*** 1.3. Report unsafe work practices and/or equipment to appropriate personnel 1.4. Select personal protective equipment appropriate for work activities 1.5. Erect formwork where no lashing points exist 1.6. Read and interpret lashing plan
2. Lash and unlash cargo	2.1. Conduct work according to site procedures and relevant legislation and any special requirements of the cargo 2.2. Identify lashing points and use appropriate fittings, ***lashing equipment*** and ***securing equipment*** for each lashing point 2.3. Lash and secure cargo to lashing points ensuring the correct spread of lashings and that lashings are secured, attached and tensioned 2.4. Securely fasten tensioners 2.5. When unlashing, release, disconnect and remove fittings from the cargo 2.6. Place lashing equipment in designated storage areas or clear from work area 2.7. Ensure lashing/unlashing operations cause no injury to personnel or damage to machinery or cargo
3. Protect cargo from weather	3.1. Cover/uncover cargo safely ensuring ***appropriate covering*** and lashing, no injury to personnel or damage to cargo or equipment 3.2. Conduct work in accordance with the requirements of national standards, safety codes and site operating procedures
4. Pack and unpack cargo	4.1. Identify and report damaged cargo following enterprise procedures 4.2. Sort and stack cargo prior to packing or after unpacking ensuring the stack is in the correct location, in accordance with

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	relevant Australian standards, safety codes and site operating procedures 4.3. Identify cargo through the interpretation of marks or numbers 4.4. Maintain tight stow of cargo 4.5. Handle cargo ensuring no injury to personnel or damage to cargo or equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to secure cargo:

- apply legislative, organisation and site requirements and procedures for securing cargo
- establish plans
- describe consequences
- complete tasks
- identify improvements
- apply safety precautions relevant to the task
- assess operational capability of equipment used and work processes selected

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to secure cargo:

- site layout and operating procedures
- focus of operation of work systems, equipment, management and site operating systems
- impact of job on enterprise and individual performance
- application of relevant industrial requirements
- relevant bond, quarantine or other legislative requirements
- identification and correct use of equipment, processes and procedures used within context of the job
- modification of activities dependant of differing workplace contexts, risk situations and environments
- identification of cargo, container and goods, coding IMDG markings and, where applicable, emergency information panels
- relevant bond, quarantine other legislative requirements
- identification and correct use of equipment, processes and procedures
- relevant handling and safety codes
- lashing and protection procedures
- marking and numbering of cargo
- use of the lashing and protection equipment
- receiving knowledge and sending messages with communications equipment whilst operating other equipment
- relevant regulations such as Hazchem and Australian Dangerous Goods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for securing cargo • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of securing cargo • working with others to undertake and complete the securing of cargo that meet all of the required outcomes • consistent timely completion of securing cargo that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the securing of cargo

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements, including:
	  • worksite safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• manufacturer's guidelines and specifications
	• Australian standards
	• procedures may include:
	  • hazard policies and procedures including relevant code of practice
	  • issue resolution and procedures
	  • job procedures and work instructions
	  • relevant guidelines relating to the use of machinery and equipment capability and limitations, tagging of unserviceable or damaged items
	  • quality procedures (where existing)
	  • security procedures
	  • follow enterprise housekeeping processes
	  • waste, pollution and recycling management processes
	  • action taken promptly, accidents and incidents reported in accordance with statutory requirements and enterprise procedures
	  • recognising and adapting appropriately to cultural differences in the workplace, including modes of behaviour and interactions among staff and others
	  • ensuring work completed systematically with attention to detail without damage to goods, equipment or personnel
	• Employment and workplace relations legislation

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	• Equal Employment Opportunity and Disability Discrimination legislation
Work area may include:	• work is performed under some supervision, generally within a team environment • customers may be internal or external • enterprises may comprise large, medium or small worksites • work may be undertaken in various work environments • cables used in the slinging of cargo include, natural fibre ropes, synthetic fibre ropes and chains
Lashing equipment may include:	• twistlocks • pelican hooks • lashing rods (bars) • turn handles (keys) • bottle screws • bridging clamps • cones
Securing equipment may include:	• chocks • racks • lashings • ropes • chains
Appropriate covering may include:	• rain covers • dust covers

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN206A Transport plant, equipment and personnel

Modification History

Not applicable.

Unit Descriptor

This unit covers transporting plant, equipment and personnel in the resources and infrastructure industries. It includes preparing for the transfer of plant, equipment and/or personnel; loading, transporting and unloading plant, equipment and personnel; and completing the transfer of loads. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare the transfer of plant, equipment and/or personnel	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify ***load*** characteristics and any ***environmental issues*** and determine if there are any special handling or equipment requirements 1.3. Determine location of transfer, establish transfer pathway and prepare ***equipment*** and/or authorised ***personnel*** according to transportation schedule 1.4. Identify, manage and report potential risks and ***hazards*** 1.5. Conduct pre-operational checks to establish the readiness of equipment for operation and report unsafe equipment to appropriate personnel
2. Load, transport and unload plant, equipment and personnel	2.1. Carry out start-up, ***park-up and shutdown procedures*** 2.2. ***Calculate*** the load according to manufacturer's specifications to prevent damage to carrying equipment and load and/or loss of load 2.3. Lift and shift load safely using appropriate devices and protective ***restraints*** for personnel, and appropriate ***personal protective equipment*** 2.4. Transport load within the ***operating capacity of the transport vehicle***, using appropriate devices and protective restraints for personnel 2.5. Transport load to the specified destination, via approved transport routes, within speed limits, on time and in original condition 2.6. Safely unload without any damage to load and/or carrying equipment
3. Complete transfer of load	3.1. Complete relevant ***documentation*** accurately and in a timely manner 3.2. Clean equipment and return to store area 3.3. Restore work area to normal working conditions

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to transport plant, equipment and personnel:

- apply legislative, organisation and site requirements and procedures for transporting plant, equipment and personnel
- identify, select and use relevant equipment, processes and procedures when preparing, transporting, loading and unloading of load
- modify the preparation, loading, transporting and unloading procedures for varying workplace contexts, risk situations and environments
- read and interpret instructions, procedures and labels relevant to the preparation, loading, transporting and unloading of loads
- identify cargo, container and goods, coding, ADG/IMDG markings and where applicable emergency information panels
- estimate the size, shape and special requirements of loads
- acknowledge and send messages with communications equipment whilst operating other equipment
- describe consequences of load movement
- provide customer/client service
- work effectively with others
- communicate effectively
- evaluate ground conditions
- interpret load plans, reports, maps and specifications
- maintain transportation records

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to transport plant, equipment and personnel:

- Australian and international codes and regulations relevant to the transportation of plant, equipment and personnel, including the Australian and international dangerous goods codes
- OHS and environmental protection procedures and guidelines relevant to the preparation and transportation of plant, equipment and personnel
- workplace procedures and policies for the preparation and transportation of plant, equipment and personnel
- operations of work systems, equipment, management and site operating systems

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for the preparation and transportation of plant, equipment and personnel

- problems that may occur when preparing for and transporting plant, equipment and personnel
- appropriate action to be taken to resolve problems and potential problems
- relevant handling and safety codes
- types of equipment used to transfer loads in terminals/wharves, their applications and procedures and precautions for their use
- requirements for safe working load (SWL) and working load limit (WLL) of load shifting equipment
- the marking and numbering systems for cargo
- relevant bond, quarantine or other legislative requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for transporting plant, equipment and personnel • implementation of requirements, procedures and techniques for the safe, effective and efficient transportation of plant, equipment and personnel • working with others to undertake and complete the transportation of plant, equipment and personnel that meet all of the required outcomes • consistent timely transportation of plant, equipment and personnel that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the transportation of plant, equipment and personnel

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements and procedures
	• manufacturer's guidelines and specifications
	• relevant codes and regulations for the transfer of cargo/freight
	• relevant Australian standards, international regulations and code of practice for the handling and transport of dangerous goods and hazardous substances, including:
	  • relevant Australian and International Dangerous Goods Codes
	  • relevant Australian marine orders
	  • relevant International Maritime Dangerous Goods Codes
	  • relevant IATA's 'Dangerous Goods by Air' regulations
	  • relevant Australian and international explosives codes
	  • water and road use
	  • relevant licence arrangements
	  • export/import/quarantine/bond requirements
	• relevant federal/state/territory OHS legislation
	• relevant environmental protection legislation
	• relevant explosive legislation and code of practice
	• relevant inspection legislation and code of practice
	• workers compensation regulations
	• workplace relations
	• emergency procedures
	• hazard policies and procedures including code of practice
	• issue resolution procedures
	• job procedures and work instructions
	• relevant guidelines relating to the safe use of machinery and equipment including the tagging

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	of unserviceable or damaged items • quality assurance procedures • security procedures • following recognised housekeeping processes • waste, pollution and recycling management processes • incidents reported in accordance with statutory requirements and enterprise procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Load may include:	• equipment
	• plant
	• personnel
	• goods with specialist requirements such as:
	  • temperature controlled goods
	  • dangerous goods

Environmental issues may include:	• culturally-sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • route taken • runoff • spills • water quality • day or night • restricted spaces • exposed conditions • open environments • small, medium or large worksites

Equipment may include:	• ancillary equipment such as:
	  • generators
	  • pumps
	  • lights
	  • compressors
	  • cleaning equipment
	• power tools

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	• hand tools
	• cutting implements
	• drill rig and associated drilling components such as:
	  • rods
	  • bits
	  • augers
	  • down hole hammer
	  • down hole tools of all types
	• support vehicles
	• earth moving equipment
	• equipment components
	• flags
	• float
	• laser profile
	• lifting and handling equipment such as:
	  • winch
	  • crane
	  • block
	  • tackle
	  • pegs
	• pipes
	• pump system and components
	• rope measuring tape
	• signs
	• tapes
	• vehicles approved for dangerous goods
	• water
	• water trucks
	• witches hats

Personnel may include:	• supervisors • drivers • drillers • blasters • tradespersons • maintenance staff/service personnel • contractors • inspectors • visitors • holders of appropriate tickets • personnel authorised by worksite management

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	• workplace personnel • official representatives
Hazards may include:	• exposure to chemicals • dangerous goods • movement of dangerous goods • equipment • movement of equipment • vehicular traffic
Start-up, **par-up and shutdown procedures** may include:	• correct identification and location of equipment • safety mechanisms check including: • horn • operating lights • vehicle is left secured

Calculation may include:	• height
	• weight
	• width
	• transport routes may include:
	  • haul roads
	  • major and minor site access roads
	  • major and minor site roads
	  • pit access roads
	  • public and private roads
	• service roads

Restraints may include:	• seatbelts
Personal protective equipment may include:	• gloves • safety headwear • safety footwear • safety glasses • two-way radios • protective clothing • high visibility clothing

Operating capacity of the transport vehicle may include:	• duration of operation
	• efficient and safe operating speed
	• operating limitations/weight/ and or load
	• pre-operational checks may include:
	  • air filter restriction indicator
	• cab including:
	  • horn
	  • lights
	  • air conditioner

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	• computer systems
	• display instrumentation such as indicators and gauges
	• orange and red engine and stop engine lights
	• fluid levels including:
	  • windscreen washer tank
	  • hydraulic oil
	  • coolant
	  • grease
	  • water
	  • engine oil
	  • fuel
	• visual and audio warning devices and lights
	• SWL or WLL is calculated using formulae for the particular type of lifting equipment
	• lifting equipment is checked to determine safe working order for the transfer

Documentation may include:	• goods identification numbers and codes
	• manifests
	• bar codes
	• goods and container identification/serial numbers
	• manufacturer's specifications
	• enterprise operating procedures and policies
	• supplier and/or client instructions
	• materials safety data sheet
	• communication records including:
	  • phone exchange
	  • electronic data interchange
	  • fax
	  • email
	  • internet
	  • radio
	  • oral
	  • aural
	  • written
	  • signed communications
	• Australian and international code of practice and regulations relevant to the transfer of cargo including:
	  • relevant Australian standards for manual

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	handling • industry safety codes • handling and transport of dangerous goods and hazardous substances • operations manuals • job specifications • induction documentation • workplace procedures • workplace policies • enterprise bargaining agreement • other industrial arrangements • awards • standards and certification requirements • quality assurance procedures • supplier and/or client instructions • dangerous goods declarations • materials safety data sheet

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN207A Operate personnel and materials hoists

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of personnel and material hoists in the resources and infrastructure industries. It includes planning and preparing for work, preparing personnel/material hoists, operating personnel/material hoists and performing post-operation activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify work instructions including shift changeover details, quality requirements, plans and specifications 1.3. Apply ***safety requirements*** throughout activity in accordance with site procedures and relevant legislation 1.4. Arrange ***signals and communication*** with other workers including barricade requirements 1.5. Identify, address and report ***potential hazards*** and ***environmental issues*** 1.6. Identify materials, ***equipment*** and tools required to complete work and check these for serviceability. Faults are reported 1.7. Conduct equipment pre-start checks in accordance with site procedures
2. Prepare personnel/material hoist	2.1. ***Inspect personnel cage/platform*** structure and SWL plate 2.2. Assess weather conditions for safe hoist operation 2.3. Conduct test run through full height of travel without a load, check mast and wall bolting 2.4. Check all safety systems including braking system 2.5. If required, ensure that attachment is lowered to ground safely and does not crush feet of personnel 2.6. If required, check personnel's lanyards/harnesses and anchors comply with relevant Australian standards and are securely fitted to railing/anchor points and personnel harness attachment points
3. Operate personnel/material hoist	3.1. Lift personnel cage/platform and test all equipment in range positions, operating controls smoothly and carefully, considering working clearances and potential crushing risks to workers

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	3.2. ***Travel personnel cage/platform*** as low as possible and operating in low gear and low speed, ensuring maximum stability at all times 3.3. Remain seated at controls whenever workers are on/in attachment and in the raised position 3.4. Communicate with personnel cage/platform using recommended signals
4. Perform post-operation activities	4.1. Empty and park attachment in designated area 4.2. Clean, remove, inspect and store attachments and equipment correctly to standards required 4.3. Clean and leave attachment parked on level, secure, and safe position for use by next operator 4.4. Report location and state/condition of personnel cage/platform before going off shift 4.5. Complete all required records and documents

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate personnel and material hoists:

- apply legislative, organisation and site requirements and procedures for the operation of personnel and material hoists
- access, interpret and apply technical and safety information
- communicate and coordinate activities with others
- keep plant and equipment records
- apply diagnostic/faultfinding techniques
- comply with environmental requirements
- work at heights
- apply isolation procedures
- read and appreciate ground conditions
- conduct work area risk assessment techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate personnel and material hoists:

- communication procedures and hand signals
- emergency shutdown procedures
- worksite inspections
- workplace and equipment safety requirements
- quality requirements
- plant, tools and equipment types, characteristics, uses and limitations
- hoist operation techniques
- personnel and material hoist equipment
- processes for the calculation of load mass requirements
- materials safety data sheet
- plans, drawings and specifications
- materials handling, storage and environmentally friendly waste management
- relevant acts, regulations and code of practice
- designs and functions of hoisting equipment
- signalling methods and communications
- fault finding and identification

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- working at heights procedures
- emergency procedures (hoist specific)
- JSA's/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the operation of personnel and material hoists • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of personnel and material hoists • working with others to undertake and complete the operation of personnel and material hoists that meet all of the required outcomes • consistent timely operation of personnel and material hoists that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of personnel and material hoists

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements and procedures including Acts and regulations dealing with:
	  • worksite safety and health
	  • mine inspection
	  • OHS
	  • explosives
	  • environment
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Safety requirements may include:	• fall restraint devices, lanyards, anchors, harnesses • safety glasses • hearing protection • gloves • cap lamps
Signals and communications could be hand, verbal or lights and may include:	• raising • lowering • stopping • slewing left • slewing right • moving forwards • moving backwards • creeping and 'dead' slow travel and movement speeds • ensuring all persons are clear on operations before starting job • discussion of job dangers/hazards
Potential hazards may include:	• unbalancing of raised attachment and load or bucket by rough and uneven ground • crushing of personnel against roofs, walls or

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	fixed objects • poor visibility • crushing of hands and fingers between top rail/ bucket lip and walls if personnel wrap their hand/ body parts over top rail • accidentally tipping personnel out by using tilt lever instead of lift • not securing attachment to bucket/ hitching system (QDS/ hook or similar) correctly can lead to crushing of personnel by platform as it slides forward and falls to ground on sudden stopping or tilting • personnel falling from attachment or bucket by over-reaching or standing on rails or bucket top edge incorrectly • incorrect procedures used at height • equipment falling or being knocked from attachment striking workers • personnel travelling in attachment at speeds above 10 KPH cannot secure themselves in a sudden braking situation and will be thrown out of basket or bucket if not wearing a lanyard/harness or restraint system • risk of being run over • ripping vent bag or causing damage to services with raised attachment • striking walls and other fixed objects due to dimensions of platform or attachment • inaccurate operation or lack of skills for attachment dimensions
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality
Equipment may include:	• loader • personnel cage/platform/attachment • kibble • integrated tool carrier

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	• crane • jumbo • harnesses/belts and lanyards for personnel in cage/ platform or attachment • working tools and equipment • barricades and signs • load restraint devices, tie-downs or straps
Inspections of personnel cage/platform may include:	• railings • floor • kick or toe boards • mesh infill in floor structure and sides • securing pins • gate/ door/ access/ chain damage • clear platform floor • even equipment stacking • safe working loads • general overall structural damage and condition considering protection integrity (cracks, welds, damage to main structural components)
Travel personnel cage/platform may include:	• no riders on attachment between jobs, levels or on declines • travelling at low speed • travelling at low height • travelling considering prevailing conditions

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN208A Perform dogging

Modification History

Not applicable.

Unit Descriptor

This unit covers the performance of dogging in the resources and infrastructure industries. It includes planning for dogging, preparing for dogging, moving loads and cleaning up. The work required in this unit relates to the National Standard for High Risk Work. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for dogging	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify ***work requirements and safety information*** before proceeding 1.3. Develop a ***preliminary dogging plan*** and site sketch taking account of essential information 1.4. Check and confirm job feasibility and schedule with the load designer and other persons as appropriate 1.5. Confirm hazards associated with the use of cranes and other load moving ***equipment*** and identify and check measures to eliminate or control these hazards with appropriate parties 1.6. Finalise and confirm dogging plan, including the scheduling of required resources, as meeting the applicable standards and codes 1.7. Identify and implement and signage or barricading requirements
2. Prepare for dogging	2.1. Identify, select, inspect, and verify as serviceable dogging equipment, materials and tools required for the plan 2.2. Label for repair or destroy unserviceable equipment, materials and tools 2.3. Communicate job sequencing schedule with team members to ensure coordination 2.4. Calculate load mass and centre of gravity using load charts and standard calculations 2.5. Calculate load in slings and equipment to suit job requirements
3. Move loads	3.1. Perform load moving in accordance with the plan and acceptable safe work practices, standards and codes and specifications 3.2. Perform work safely at heights, within uncompleted structures and/or in confined and enclosed spaces 3.3. Connect lifting gear to load 3.4. Connect load to movement device using

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	appropriate and certified equipment in accordance with relevant standards 3.5. Ensure stability of the load by application of load movement procedure, temporary bracing and/or load support appropriate to the task 3.6. Follow appropriate designer's specifications during the placement and securing of the load 3.7. Direct load to landing position using communication compliant with Australian standards and site procedures
4. Clean up	4.1. Dismantle and inspect load shifting equipment 4.2. Clear work area of materials by disposing, reusing or recycling 4.3. Check, clean, maintain and store tools and equipment 4.4. Work completion procedures are applied and relevant personnel notified that work is finished

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to perform dogging:

- apply legislative, organisation and site requirements and procedures for performing dogging
- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand coordination
- use hand and power tools
- identify hazards

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to perform dogging:

- relevant Acts, regulations and code of practice
- designs and functions of lifting equipment
- signalling methods and communications
- appropriate national certification standards
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- hand and whistle signals
- potential hazards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to perform dogging • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the performance of dogging • working with others to undertake and perform dogging that meets all of the required outcomes • consistent timely completion of dogging that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and perform dogging

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • management plans • relevant OHS policy • relevant code of practice • manufacturer's instructions • safe working procedures (or equivalents) • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work requirement and safety information and procedures may include:	• shift briefings
	• handover details
	• work orders
	• relevant legislation and regulations
	• relevant Australian standards
	• management plans
	• relevant OHS policy
	• relevant code of practice
	• manufacturer's instructions
	• safe working or job procedures (or equivalents)
	• work briefings including:
	  • site plans and drawings
	  • work specifications
	  • basic working plans
	  • material schedules
	  • confirmed mass and dimensions of loads
	  • capacities and availability of load shifting equipment

Preliminary dogging plan may include:	• confirmed details of dogging requirements • confirmed dimensions

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	• site access and egress • suitability and availability of materials • tools and equipment • identification of potential hazards • probable control measures • identification of site coordination requirements

Equipment may include:	• slings
	• ropes
	• shackles
	• eye bolts
	• spreader beams
	• tools and equipment are to include:
	  • brick cages
	  • personnel cages
	  • kibbles
	  • rubbish bins
	  • spreader bars and beams
	  • rescue cages

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN209A Perform basic rigging

Modification History

Not applicable.

Unit Descriptor

This qualification reflects the role of employees such as drillers' assistants who undertake a prescribed range of functions involving known routines and procedures and who take some responsibility for the quality of work outcomes.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for rigging	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify ***work requirements*** before proceeding 1.3. Develop a ***preliminary rigging plan*** and site sketch taking account of essential information 1.4. Check and confirm job feasibility and schedule with the client, the load designer and other persons as appropriate 1.5. Confirm hazards associated with the use of cranes and other load moving ***equipment*** and identify and check measures to eliminate or control these hazards with appropriate parties 1.6. Finalise and confirm rigging plan, including the scheduling of required resources 1.7. Safety requirements are followed in accordance with safety plans and policies 1.8. Signage/barricade requirements are identified and implemented
2. Prepare for rigging	2.1. Select and inspect resources, materials and equipment for compliance with job specifications and applicable Australian standards 2.2. Inspect lifting equipment according to manufacturer's specifications 2.3. Label, reject and dispose lifting equipment which is identified as inconsistent with manufacturer's specifications to prevent its use in any circumstance 2.4. Sling loads and slings to protect the load and associated equipment 2.5. Secure whole or part loads to prevent uncontrolled movement 2.6. Attach and position slings, or parts of slings, to the load to ensure safe movement 2.7. Attach slings, or parts of slings, to hook while the hoist wire is vertical 2.8. Attach tag lines to the load where specified

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	2.9. Perform test lifts to ensure safe and secure movement of the load where specified
3. Move loads	3.1. Calculate and confirm appropriate safe working loads and centre gravity using load charts and standard calculation rules prior to load moving 3.2. Perform load moving in accordance with the plan, acceptable safe work practices and applicable Australian standards, code of practice and manufacturer's specifications 3.3. Perform work safely at heights, within incomplete structures and / or in confined and enclosed spaces 3.4. Connect lifting gear to load to Australian standards and manufacturer's specifications 3.5. Connect load to movement device using appropriate and certified equipment in accordance with the Australian standards and manufacturer's specifications 3.6. Ensure stability of the load by application of load movement procedure, temporary bracing and/or load support appropriate to the task and related manufacturer's specifications 3.7. Follow appropriate designers specifications during the placing and securing of the load 3.8. Dismantle and remove / restore load shifting equipment in accordance with site requirements 3.9. Standard communication signals are used to coordinate safe movement of the load
4. Clean up	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation/regulations/code of practice and job specification 4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer's recommendations and standard work practices 4.3. Work completion procedures are applied and relevant personnel notified that work is finished

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to perform basic rigging:

- apply legislative, organisation and site requirements and procedures for performing basic rigging
- apply operation safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply hand-eye coordination
- use relevant hand tools
- apply diagnostic techniques
- identify potential hazards

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to perform basic rigging:

- applicable national certification standards
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- hand and whistle signals
- materials handling, storage and environmentally friendly waste management
- relevant acts, regulations and code of practice

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for performing basic rigging • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of performing basic rigging • working with others to undertake and complete the performance of basic rigging that meets all of the required outcomes • consistent timely completion of basic rigging that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the performance of basic rigging

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • safety requirements • management plans • applicable OHS policy • applicable code of practice • manufacturer's instructions • safe working or job procedures (or equivalents) • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may include:	• shift briefings • handover details • work orders
Preliminary rigging plan may include:	• confirmed details of rigging requirement • confirmed dimensions • site access and egress • suitability and availability of materials • tools and equipment • identification of potential hazards • control measures • identification of site coordination requirements • unless otherwise specified, rigging is to conform with the requirements of the National Occupational Health and Safety Certification Standards for Users and Operators of Industrial Equipment (NOHSC: 1006)
Equipment may include:	• steel erection • particular hoists • placement of pre-cast concrete

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	• safety nets and static lines • mast climbers • perimeter safety screens and shutters • cantilevered crane loading platforms • slinging and directing of loads
Equipment excludes:	• rigging of cranes • hoists • conveyors • dredges and excavators • tilt-slabs • rigging work associated with demolition • dual lifts • rigging of gin poles • shear legs • flying foxes and cableways • guyed derricks and structures

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN210A Perform intermediate rigging operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the performance of intermediate rigging operations in the resources and infrastructure industries. It includes planning for rigging, preparing for rigging, moving loads and cleaning up. The work required in this unit relates to the National Standard for High Risk Work. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for rigging	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify ***work requirements*** before commencing 1.3. Develop a ***preliminary rigging plan*** and site sketch taking account of essential information 1.4. Follow safety information including signage/barricade requirements 1.5. Check and confirm job feasibility and schedule with the client, the load designer and other persons as appropriate 1.6. Identify and apply any environmental protection requirements 1.7. Finalise and confirm rigging plan including the scheduling of required resources
2. Prepare for rigging	2.1. Identify, select, inspect, assemble and confirm as serviceable rigging ***equipment***, materials and tools required for the plan 2.2. Label for repair or destroy unserviceable equipment, materials and tools 2.3. Where appropriate, install fall arrest equipment with ground level installation 2.4. Determine and select personal cartage systems
3. Move loads	3.1. Calculate and confirm appropriate safe working loads and centre of gravity using load charts and standard calculation rules prior to load moving 3.2. Perform load moving in accordance with the plan and acceptable safe work practices 3.3. Perform work safely at heights, within incomplete structures and/or in confined and enclosed spaces 3.4. Connect lifting gear to load to Australian standards and manufacturer's specifications 3.5. Connect load to movement device using appropriate and certified equipment 3.6. Ensure stability of the load by application of load movement procedure, temporary

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	bracing and/or load support appropriate to the task 3.7. Safely move load to required destination and secure in position 3.8. Follow appropriate designer's specifications during the placement and securing of the load 3.9. Dismantle and remove/restore load shifting equipment
4. Clean up	4.1. Clear work area and dispose, reuse or recycle materials 4.2. Clean, check, maintain and store plant, tools and equipment 4.3. Apply work completion procedures and notify relevant personnel that work is finished

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to perform intermediate rigging operations:

- apply legislative, organisation and site requirements and procedures for performing intermediate rigging operations
- apply operation safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply hand-eye coordination
- use relevant hand tools
- apply diagnostic techniques
- identify potential hazards

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to perform intermediate rigging operations:

- relevant National Certification Standards
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- hand and whistle signals
- crane operations and limitations
- safe work method statements
- materials safety data sheet

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the performance of intermediate rigging operations • implementation of requirements, procedures and techniques for the safe, effective and efficient performance of intermediate rigging operations • working with others to undertake and complete the performance of intermediate rigging operations that meet all of the required outcomes • consistent timely completion of the performance of intermediate rigging operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the performance of intermediate rigging operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • relevant regulations • management plans • relevant OHS policy • relevant code of practice • manufacturer's instructions • safe working or job procedures (or equivalents) • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders • site plans and drawings • work specifications • basic working plans and material schedules • confirmed mass and dimensions of loads • capacities and availability of load shifting equipment
Preliminary rigging plan may include:	• confirmed details of rigging requirement • confirmed dimensions • site access and egress • suitability and availability of materials, tools and equipment • identification and potential hazards • control measures and identification of site coordination requirements • unless otherwise specified, rigging is to conform to the requirements of the National OHS Certification Standards for Users and

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	Operators of Industrial Equipment (NOH&SC:1006)

Rigging equipment may include:	• rigging of cranes
	• hoists
	• conveyors
	• dredges and excavators
	• tilt-slabs
	• rigging work associated with demolition
	• dual lifts
	• but **excludes** the following:
	  • rigging of gin poles
	  • shear legs
	  • flying foxes and cableways
	  • guyed derricks and structures
	  • suspended and hung scaffolds
	• equipment range for dogging and rigging work associated with steel erection includes:
	  • all hoists
	  • placement of pre-cast concrete
	  • safety nets and static lines
	  • mast climbers
	  • perimeter safety screens and shutters
	  • cantilevered crane loading platforms
	  • slinging and directing of loads

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN211A Conduct basic scaffolding operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of basic scaffolding operations in the resources and infrastructure industries. It includes planning and preparing for scaffolding operations, erecting and maintaining scaffolding and dismantling scaffolding. The work required in this unit relates to the National Standard for High Risk Work. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for scaffolding operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access and interpret ***work requirements*** 1.3. Develop the ***preliminary scaffolding plan*** in accordance with ***safety*** requirements 1.4. Confirm ***site preparation*** with other appropriate personnel and implement hazard control measures if necessary 1.5. Identify and select ***equipment*** consistent with work requirements 1.6. Check equipment is ready for use and report, label and repair any defects 1.7. Confirm scaffolding plan in accordance with Statutory/regulatory authorities and ***environmental requirements***
2. Erect and maintain scaffolding	2.1. Erect scaffolding in accordance with ***safe work practices*** 2.2. Adhere to safety requirements at heights, on incomplete structures and in confined spaces 2.3. Install static lines when specified 2.4. Assemble and erect lifting device where specified 2.5. Inspect ***critical structural and safety areas*** and equipment periodically while in use to identify any variation from the plan and record inspection in inspection log 2.6. Perform alteration or repair to critical structural and safety areas and equipment
3. Dismantle scaffolding	3.1. Isolate scaffolding and appropriately sign and barricade to enable safe dismantling 3.2. Inspect, classify, label and dismantle scaffolding safely using the reverse procedure for erection 3.3. Clear work area and dispose of used and recycled materials in accordance with job specification, relevant statutory/regulatory authorities and environmental requirements 3.4. Clean and check equipment and store in accordance with manufacturer's

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	recommendations and standard work practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct basic scaffolding operations:

- apply legislative, organisation and site requirements and procedures for conducting basic scaffolding operations
- apply scaffolding operational safety requirements
- access, interpret and apply technical scaffolding information
- maintain scaffolding equipment records
- apply hand-eye coordination
- operate/use relevant hand tools
- identify hazards and potential hazards at scaffolding site
- communicate scaffolding ideas and information
- work in a team environment on site

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct basic scaffolding operations:

- workplace and scaffolding equipment safety requirements
- quality scaffolding requirements
- plant, tools and equipment types, characteristics, uses, limitations and relevance to scaffolding
- materials safety data sheet
- scaffolding plans, drawings and specifications
- scaffolding materials handling, storage and environmentally friendly waste management
- JSAs/safe work method statements
- relevant legislation, regulations and code of practice relating to the erection, alteration and dismantling of scaffolding
- scaffolding lifting devices
- relevant national certification standards relating to scaffolding
- scaffolding site and equipment safety requirements
- scaffolding equipment characteristics, technical capabilities and limitations
- scaffolding operational and maintenance procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of basic scaffolding operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conduct of basic scaffolding operations • working with others to undertake and complete the conduct of basic scaffolding operations that meets all of the required outcomes • consistent timely completion of basic scaffolding operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete basic scaffolding operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • relevant federal, state and local authorities administering the applicable acts • regulations • relevant code of practice • manufacturer's requirements • Employment and workplace relations legislation • Equal Employment Opportunity Disability Discrimination legislation
Work requirements may include:	• plans • specifications • quality scaffolding requirements • quantity scaffolding requirements • operational details • shift briefings • handover details • work orders • purpose of scaffolding
Preliminary scaffolding plan may include:	• site sketch • scaffolding requirements • scaffolding / equipment configurations • identification of potential hazards • control measures • site access and exit • estimation of types and quantities of components • identification of scaffolding coordination requirements • transportation of required equipment
Safety may include:	• relevant OHS requirements in accordance with the following:

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	• applicable legislation • applicable regulations • applicable code of practice • applicable organisational safety policies and procedures • project safety plan • protective clothing and equipment • use of tools and equipment • workplace environment • handling of materials • use of fire fighting equipment • First Aid • hazard control including hazardous materials and substances • safe operating workplace procedures • conduct an operational risk assessment and treatments associated with power cables including: • overhead service trays • cables and conduits • lighting • earth leakage boxes • trip hazards • working with dangerous materials • working in confined spaces • surrounding structures • restricted access barriers • traffic control • working at heights • working in proximity to others • worksite visitors • the public • emergency procedures including: • extinguishing fires • organisational First Aid requirements • evacuation • management plans • manufacturer's instructions • reporting defects in equipment
Site preparation may include:	• site isolation • worksite inspection

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	• assessment of conditions • hazard identification • erection of barriers • installation of signage • assembly and erection of lifting devices • establishment of footings • equipment defect identification
Equipment may include:	• plant • tools • free standing prefabricated scaffolds • cantilevered hoists with a working load limit not exceeding 500kg (materials only) • ropes • gin wheels • safety nets and static lines • bracket scaffolds (tank and formwork) • aluminium modular scaffolding equipment • ladders • scaffolding planks • steel box spanners • hammers • spirit levels • tape measures • shovels • spanners • whipping cord • fibre rope • scaffolding materials
Statutory/regulatory authorities may include:	• relevant federal, state and local authorities administering the applicable acts • regulations • relevant code of practice • applicable Australian standards • manufacturer's requirements
Environmental requirements may include:	• waste management • noise • dust • clean-up management • environmental plans • regulatory obligations • environmental protection

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Safe work practices may include:	• planned hazard prevention and control measures • whipping designated rope ends in accordance with regulations and project specifications • splicing designated rope ends in accordance with regulations and project specifications • applying bends and hitches and inspecting them in accordance with project specifications • maintenance of an inspection log for the inspection and repair of scaffolding
Critical structural and safety areas may include:	• damage • corrosion • wear • stability • current usage reconciled with changes to the plan via the inspection log • scaffold stability

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN212A Conduct non-slewing crane operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of non-slewing cranes, other than gantry cranes in the resources and infrastructure industries. It includes planning and preparation, operating the crane and crane operator maintenance. The work required in this unit relates to the National Standard for High Risk Work. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for non-slewing crane operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and confirm ***work requirements*** prior to proceeding 1.3. Identify and control site ***hazards*** and access, interpret and apply ***safety information and procedures*** throughout the work 1.4. Coordinate activities at the site prior to commencement of and during operations
2. Operate non-slewing crane	2.1. Carry out pre-start, start-up, park-up and shut-down procedures in accordance with Australian standards, manufacturer's and/or site requirements 2.2. Position crane safely prior to commencement of lift operations in accordance with Australian standards, manufacturer's specifications and approved man-basket operation procedures 2.3. Use relevant ***crane controls and functions*** within manufacturer's specifications to effectively lift and position loads or personnel as required 2.4. Respond to monitoring systems and alarms in accordance with manufacturer's instructions and site procedures 2.5. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and site procedures 2.6. Complete work in accordance with the agreed plan and within the operating capacities of the allocated equipment 2.7. Interpret signals in accordance with AS2550
3. Travel crane	3.1. Plan the route so crane will travel on firm and level surfaces 3.2. Identify and control ***hazards*** en route 3.3. Maintain Australian standards, manufacturer's instructions and site requirements when crane is travelling

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4. Perform multiple crane lift	4.1. Obtain approval to perform a multiple crane lift from the appropriate statutory authority. 4.2. Plan ***multiple crane lift*** and obtain approval for lifting plan by an authorised person 4.3. Perform the multiple crane lift under the supervision of an authorised person in accordance with the appropriate Australian standard and other statutory regulations
5. Perform crane operator maintenance	5.1. Inspect non slewing crane report/repair faults in accordance with manufacturer instructions and site requirements 5.2. Perform routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer instructions and site authorised procedures and practices 5.3. Perform minor maintenance to manufacturer instructions and site requirements 5.4. Support operator during the preparation and procedure of major maintenance tasks in accordance with site requirements 5.5. Process ***records*** in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct non-slewing operations:

- apply legislative, organisation and site requirements and procedures for the operation of non-slewing cranes
- calculate volume and weights
- access interpret and apply technical information relating to the operations of non-slewing cranes other than gantry cranes
- maintain equipment records
- use hand and power tools
- apply fault finding techniques when planning to operate a non-slewing cranes other than gantry cranes
- comply with environmental requirements
- dispose of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate a non slewing crane:

- Australian standards related to cranes/lifting
- site and equipment safety requirements
- non-slewing crane other than gantry crane equipment characteristics, technical capabilities and limitations
- non-slewing crane other than gantry crane operational procedures
- non-slewing crane other than gantry crane maintenance systems and procedures
- basic geological and survey data related to non-slewing cranes other than gantry cranes
- basic rigging and slinging methods
- hand and whistle signals
- site environmental requirements and constraints related to non-slewing cranes other than gantry cranes
- Hazchem relevant to non-slewing cranes other than gantry cranes

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the operation of non-slewing cranes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of non-slewing crane operations • working with others to undertake and complete the operation of non slewing cranes that meets all of the required outcomes • consistent timely completion of non-slewing crane operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of non slewing cranes

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards, particularly AS2550 • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may include:	• shift briefings • handover details • work orders • crane equipment to be used • nature and scope of tasks • details of load chart/factors • achievement targets • working conditions • site lighting arrangements • defects on equipment • hazards and potential hazards identification and control • coordination of work
Hazards may include:	• power lines • trees • overhead service lines • bridges • surrounding buildings • obstructions • structures • facilities • other equipment • dangerous materials • earthworks • underground services
Safety information and	• legislation and regulations

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procedures may include:	• relevant Australian standards • hazard identification and control • management plans • OHS policy • code of practice • manufacturer's instructions • safe working or job procedures • control and safety of travelling speed • selection and observance of safe working levels and angles • boarding and disembarking procedures • communications and signalling procedures
Prepare for operations may include:	• selection of stable base • avoidance of obstacles • hazard identification and hazard control • identification of load • identification and selection of lifting equipment • inspection and certification of lifting equipment • management of permits and tags
Crane controls and functions may include:	• boom up • boom down • boom extensions • hoist up • hoist down • manual jib extensions
Multiple crane lift may include:	• assessment of the load to be carried by each crane • determination of the types of cranes suitable for use • safety margins to be used in the lift • hazard identification and control measures • sequence of operations
Records may include:	• maintenance records • handover records • records of breaks • log books

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Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN213A Work effectively in the drilling industry

Modification History

Not applicable.

Unit Descriptor

This unit covers working effectively in the drilling industry. It includes following safe manual handling procedures, routinely practicing good housekeeping, completing pre-start checks and refuelling vehicles and plant and driving vehicles. The work required in this unit relates to the National Standard for High Risk Work. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those assisting with a variety of tasks within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Follow safe manual handling procedures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Assess load to be moved 1.3. Plan lift transport route and lay down position for stability 1.4. Use necessary ***manual handling aids*** safely and efficiently and seek assistance where required
2. Routinely practice good housekeeping	2.1. Keep all relevant ***housekeeping areas*** clean, neat and tidy 2.2. Keep all tools and equipment clean and stored in the correct place when not in use 2.3. Identify possible hazards from poor housekeeping 2.4. Implement good housekeeping practice 2.5. Report equipment problems
3. Complete pre-start checks	3.1. Walk around plant/equipment/vehicle checking all items are serviceable and in good condition and complete documentation as required by company procedures 3.2. Check and top up fluids as required 3.3. Check all guards and safety devices are in place and serviceable 3.4. Ensure all personnel are clear or in a safe position before starting 3.5. Complete required records and reporting
4. Refuel vehicles and plant	4.1. Enforce no-smoking zone while ***refuelling*** 4.2. Select correct fuel 4.3. Refuel engine in accordance with company/site procedures 4.4. Clean up any spills 4.5. Leave fuel storage area clean and tidy 4.6. Note remaining fuel supply and complete required records/reporting
5. Drive vehicle	5.1. Check ***vehicle*** roadworthiness and load distribution and security before commencing 5.2. Identify ***potential vehicle hazards*** from

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	road trip/load and implement relevant hazard minimisation procedures 5.3. Plan trip to maximise safety and minimise cost 5.4. Drive vehicle in compliance with local conditions and road/site rule 5.5. Change wheel as required

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to work effectively in the drilling industry:

- apply legislative, organisation and site requirements and procedures for working effectively in the drilling industry
- apply skills for safe lifting
- demonstrate literacy skills to complete required reporting
- demonstrate basic mathematical skills to make calculations relating to linear measurements, volumes weights and distances

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to work effectively in the drilling industry:

- housekeeping standards and the contribution of housekeeping to safety and efficiency
- pre-start check procedures
- driving hazards
- fuels and fuelling hazards
- jacking and wheel changing hazards and techniques
- manual handling techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for working safely in the drilling industry • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of housekeeping, pre-start checks, vehicle refuelling and driving vehicles • working with others to undertake and complete the housekeeping and OHS procedures that meet all of the required outcomes • consistent timely completion of OHS procedures, housekeeping, pre-start checks, refuelling and driving vehicles that safely, effectively and efficiently meet the required outcomes • appropriate licence/s for vehicles
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete working effectively in the drilling industry

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Manual handling aids may include:	• truck mounted cranes (e.g. HIAB) • overhead cranes • jib cranes • fork lift trucks • integrated tool carrier (IT)
Housekeeping areas may include:	• rig and environs • fuel dumps • chemical storage • camp environs • lay down and storage areas • workshop, store, yard • vehicles • crib rooms • offices • ablution facilities
Refuelling may include:	• diesel/petrol • bowser/drum • fire hazards - smoking, mobile phones, hot equipment
Vehicles may include:	• two/all wheel drive • heavy rigid trucks • articulated vehicles • tracked vehicles
Potential vehicle hazards may include:	• hazardous driving conditions • jacking on uneven/uncompacted ground • different wheel types

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Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN301B Operate elevating work platform

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of elevating work platforms in the resources and infrastructure industries. It includes planning and preparing for operations, working from the platform, carrying out maintenance and cleaning up. The work required in this unit relates to the National Standard for High Risk Work. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not applicable.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access and interpret ***work requirements*** and ***safety information and procedures*** 1.3. Select plant, tools and equipment to carry out tasks that are consistent with the work requirements, check for serviceability and rectify or report any faults prior to commencement 1.4. Perform ***pre-operational checks*** according to manufacturer's specifications and/or authorised site procedures 1.5. Coordinate activities with others at the site prior to commencement of, and during, the work activity 1.6. Identify and control ***site hazards***
2. Conduct work activities from elevating work platform	2.1. Stabilise ***elevating work platform*** and select attachments according to site conditions, manufacturer's specifications and site procedures 2.2. Place tools and equipment into bucket/platform in line with job requirements 2.3. Use approved safety devices to ensure safety of personnel and surrounding site in accordance with site procedures and legislative requirements 2.4. Act on or report monitoring systems and alarms in accordance with manufacturer's instructions and site procedures 2.5. Recognise and respond to hazardous and ***emergency situations*** in accordance with manufacturer's instructions and site procedures 2.6. Complete work in accordance with agreed work plan, site procedures and regulations
3. Carry out operator maintenance	3.1. Carry out work platform inspections and fault finding in accordance with manufacturer's instructions and site requirements 3.2. Carry out routine operational servicing,

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	lubrication and housekeeping tasks in accordance with manufacturer's instructions and site authorised procedures and practices 3.3. Carry out ***minor operator maintenance*** to manufacturer's instructions and site requirements
4. Clean up	4.1. Clear work area and reuse, recycle or dispose of materials in accordance with legislation/regulations/code of practice and job specifications 4.2. Clean plant, tools and equipment checked, maintain and store in accordance with manufacturer's recommendations and standard work practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate an elevating work platform:

- apply legislative, organisation and site requirements and procedures for elevating work platforms
- apply operational safety requirements
- identify hazards and potential hazards
- apply hand-eye coordination to control functions
- access, interpret and apply technical information relating to the planning and operation of an elevating work platform to perform work requirements
- maintain equipment records
- use relevant hand tools
- apply environmental constraints and procedures
- dispose of environmentally sensitive oils, fluids and materials

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate elevating work platforms:

- the appropriate National Certification Standards
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- elevating work platform operational procedures
- basic geological and survey data related to elevating work platforms
- site environmental requirements and constraints related to elevating work platforms

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating elevating work platforms • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of operating elevating work platforms • working with others to undertake and complete the operation of elevating work platforms that meet all of the required outcomes • consistent timely completion of operating elevating work platforms that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of elevating work platforms

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may include:	• shift briefings • handover details • work orders • equipment to be used • nature and scope of tasks • load details • achievement targets • working conditions • site lighting arrangements • defects on equipment • hazards and potential hazards • coordination requirements
Safety information and procedures may include:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice • manufacturer's instructions • safe working or job procedures (or equivalents)
Specific safety requirements may include:	• control and safety of raising and lowering booms • slewing and telescoping • deployment of outriggers • stabilisers • preparation of safety harnesses and blocking

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Pre-operational checks may include:	• selection of stable base • avoidance of obstacles and hazards • identification of load • inspection and certification of equipment • management of permits and tags
Site hazards may include:	• power lines • facilities • trees • other equipment • overhead service lines • dangerous materials • bridges • underground services • surrounding buildings • recently filled trenches • obstructions • structures • weather
Elevating work platform may be titled locally:	• EWP • cherry pickers • skyworkers • scissor lift • trailer-mounted lifts • sky-cranes • boom lift Note: the definition of equipment to be covered by this unit will need to be made by the site in accordance with appropriate legislative and regulatory requirements, which may vary with industry sector and with jurisdiction.
Emergency situations may include:	• loss of power • failure of controls • equipment fires
Minor operator maintenance procedures are those:	• established and authorised for the site Note: depending on the site requirements, there may be circumstances in which operators do not perform these functions.

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Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN302A Conduct intermediate scaffolding operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting intermediate scaffolding operations in the resources and infrastructure industries. It includes planning for operations, preparing for scaffolding, erecting scaffolding, maintaining scaffolding and dismantling scaffolding. The work required in this unit relates to the National Standard for High Risk Work. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for operations	1.1. Access, interpret and apply ***compliance documentation*** and ***OHS requirements*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Develop a ***preliminary scaffolding plan*** and site sketch taking account of essential information 1.4. Check and confirm job feasibility and schedule with others as appropriate 1.5. Confirm ***hazards*** associated with scaffolding and identify and check measures to eliminate or control these hazards with the appropriate parties 1.6. Finalise and confirm the scaffolding plan including the scheduling of required resources
2. Prepare for scaffolding	2.1. Identify, select, inspect and certify as serviceable scaffolding ***equipment***, materials and tools required for the job in accordance with code of practice and guides 2.2. Label and repair or destroy unserviceable scaffolding equipment, materials and tools 2.3. Prepare scaffolding/equipment gear 2.4. Arrange and coordinate transportation of equipment and tools to the worksite in accordance with the scaffolding plan 2.5. ***Prepare the site*** for scaffolding
3. Erect scaffolding	3.1. Carry out erection for appropriate types of scaffolding 3.2. Perform work safely at heights, on incomplete structures and in confined spaces 3.3. On completion leave the site clean of all surplus components, equipment, tools and debris and inspect the scaffolding/equipment
4. Maintain scaffolding	4.1. Inspect ***critical structural and safety areas*** of the scaffolding/equipment to identify any

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	variation from the plan 4.2. Perform alteration or repair with due regard for the critical safety and structural areas of the scaffolding/equipment
5. Dismantle scaffolding	5.1. Dismantle scaffolding in a safe and orderly manner 5.2. Inspect, classify, label and remove equipment from the site

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct intermediate scaffolding operations:

- apply legislative, organisation and site requirements and procedures for conducting intermediate scaffolding operations
- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply hand-eye coordination
- use relevant hand tools
- identify hazards

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct intermediate scaffolding operations:

- workplace and equipment safety requirements
- quality requirements relating to scaffolding
- appropriate national certification standards
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting intermediate scaffolding operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conduct of intermediate scaffolding operations • working with others to undertake and conduct intermediate scaffolding operations that meets all of the required outcomes • consistent timely completion of the conduct of intermediate scaffolding operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of intermediate scaffolding operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements and procedures, including emergency procedures such as:
	  • extinguishing fires
	  • organisational First Aid requirements
	  • evacuation
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

OHS requirements may include:	• legislation, regulations and code of practice relevant to conducting scaffolding operations • organisational safety policies and procedures • project safety plan • protective clothing • protective equipment • how tools and equipment are used • workplace environment • handling of materials • use of fire fighting equipment • organisational First Aid • hazard control • handling hazardous materials and substances • safe operating procedures
Work requirements may include:	• scaffolding drawings and plans • site drawings and plans • scaffolding design • equipment design • specifications • quality requirements • operational details • shift briefings

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	• handover details • work specifications • work tasks • job specifications • quality requirements
Preliminary scaffolding plan may include:	• confirmed details of scaffolding requirement • scaffolding/equipment configuration • identification of potential hazards • probable control measures • site access and egress • estimate of types and quantities of components • identification of scaffolding coordination requirements

Hazards may include:	• hazards associated with power cables including:
	  • overhead service trays
	  • cables
	  • conduits
	  • lighting
	  • earth leakage boxes
	• trip hazards
	• working with dangerous materials
	• working in confined spaces
	• restricted access barriers
	• traffic control
	• working at heights
	• working in proximity to others
	• worksite visitors
	• the public

Intermediate **equipment** may include:	• cantilevered crane loading platforms
	• cantilevered and spurred scaffolds
	• barrow ramps and sloping platforms
	• scaffolding associated with perimeter safety screens and shutters
	• mast climbers
	• but **excludes** work involving:
	  • hung scaffolds, including scaffolds hanging from tubes, wire ropes and chains
	  • suspended scaffolds

Preparing the site may include:	• site isolation • erection of barriers

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	• installation of signage • assembly and erection of lifting devices • establishment of footings
Critical structural and safety areas to be inspected may include:	• damage • corrosion • wear • stability • current usage checked against type of scaffolding/equipment • identify any changes to the plan/scaffolding through the inspection log

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN304A Conduct slewing crane operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of slewing cranes in the resources and infrastructure industries. It includes planning and preparing operation of the crane. The work required in this unit relates to the National Standard for High Risk Work. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** in the form of shift briefings, handover details or work orders are before proceeding 1.3. Access and apply ***safety information and procedures*** throughout the work 1.4. Prepare work in accordance with AS2550, relevant legislation, ***safety requirements*** and manufacturer/site requirements 1.5. Carry out assembly and dismantling of boom/jib in accordance with relevant Australian standards, manufacturer's instructions and site requirements 1.6. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity
2. Operate slewing crane	2.1. Carry out pre-start, start-up, park-up and shutdown procedures in accordance with relevant Australian standards, manufacturer and/or site requirements 2.2. Position, stabilise and level crane prior to commencement of lift operations in accordance with relevant Australian standards, manufacturer's specifications and approved man-basket operation procedures 2.3. ***Prepare load*** for lift in accordance with crane limitations and rigging requirements 2.4. Confirm the work area is clear and safe prior to commencing the lift 2.5. Use relevant ***crane controls and functions*** within manufacturer's specifications to effectively lift and position loads or personnel as required 2.6. Act on or report monitoring systems and alarms in accordance with site instructions/requirements 2.7. Recognise and respond to hazardous situations 2.8. Recognise and respond to emergency

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	situations in accordance with manufacturer's instructions and site procedures 2.9. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment
3. Travel crane	3.1. Plan the route to be travelled to ensure that crane traverses firm and level surfaces 3.2. Ensure necessary ***hazard*** identification and control measures are in place 3.3. Travel the crane in accordance with relevant Australian standards, manufacturer's instructions and site requirements
4. Carry out multiple crane lift	4.1. Obtain approval to carry out a multiple crane lift from the appropriate statutory authority 4.2. ***Plan multiple lift*** and obtain approval for lifting plan by an authorised person 4.3. Carry out the previously authorised plan of operations under the supervision of and authorised person in accordance with the appropriate Australian Standard and other statutory regulations
5. Carry out operator maintenance	5.1. Carry out slewing crane inspections and fault finding in accordance with manufacturer's instructions and site requirements 5.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and site authorised procedures and practices 5.3. Carry out ***minor operator maintenance*** to manufacturer's instructions and site requirements 5.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site requirements 5.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate a slewing crane:

- apply legislative, organisation and site requirements and procedures for the operation of a slewing crane
- apply operational safety requirements
- access interpret and apply technical information
- calculate volume weights
- maintain equipment records
- apply hand-eye coordination to control functions
- use relevant hand tools
- apply diagnostic techniques
- comply with environmental requirements
- dispose of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate a slewing crane

- Australian standards related to cranes/lifting
- site and equipment safety requirements
- crane equipment characteristics, technical capabilities and limitations
- crane operational procedures
- crane maintenance systems and procedures
- basic geological and survey data related to slewing cranes
- basic rigging and slinging requirements
- hand and whistle signals
- site environmental requirements and constraints related to slewing cranes
- Hazchem relevant to slewing cranes

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting slewing crane operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conducting slewing crane operations • working with others to undertake and complete the slewing crane operations that meet all of the required outcomes • consistent timely completion of slewing crane operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the slewing crane operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards, including AS2550 • relevant state based legislation and regulations in relation to cranes • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may include:	• crane equipment to be used • nature and scope of tasks • details of load chart/factors • achievement targets • working conditions • site lighting arrangements • defects on equipment • hazards and potential hazards • coordination requirements/issues
Safety information and procedures may include:	• relevant legislation and regulations • relevant Australian standards • management plans • relevant OHS policy • relevant code of practice • manufacturer's instructions • safe working or job procedures
Safety requirements may include:	• control and safety of slewing speed • selection and observance of safe working levels and angles • avoidance of obstacles and hazards • boarding and disembarking procedures • observation of wind restrictions • communications and signalling procedures
Prepare load may include:	• identification of load

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	• identification and selection of lifting equipment • inspection and certification of lifting equipment • fitting of optional implements/accessories • management of permits and tags • selection of stable base • avoidance of obstacles and hazards
Crane controls and functions may include:	• boom up • boom down • boom extensions • hoist up • hoist down • manual jib and fly-jib extensions • slew
Hazards may include:	• power lines • trees • overhead service lines • bridges • surrounding buildings • obstructions • structures • facilities • other equipment • dangerous materials • earthworks • underground services • time of day
Plan multiple lifts may include:	• assessment of the load to be carried by each crane • determination of the types of cranes suitable for use • safety margins and hazard control measures to be used in the lift • sequence of operations
Minor operator maintenance procedures are those:	• established and authorised for the site Note: depending on the site requirements, there may be circumstances in which operators do not perform these functions.

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Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN305A Operate a gantry or overhead crane

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of a gantry or overhead cranes in the resources and infrastructure industries. It includes planning and preparing, operating the crane and carrying out operator maintenance. The work required in this unit relates to the National Standard for High Risk Work. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and confirm ***work requirements*** prior to proceeding 1.3. Access and apply ***safety information and procedures*** throughout the work 1.4. ***Prepare site*** in accordance with AS2550, legislation and manufacturer/site requirements 1.5. Communicate with others to coordinate activities at the site prior to commencement of and throughout operations
2. Operate crane	2.1. Prepare load for lift in accordance with crane limitations and rigging requirements 2.2. Perform pre-start, start-up, park-up and shutdown procedures in accordance with relevant Australian standards, manufacturer's and/or site requirements 2.3. Confirm the work area ***hazards*** are removed or controlled prior to commencing the lift 2.4. Interpret ***signals*** in accordance with AS2550 2.5. Operate controls to lift, transfer and lower loads in accordance with manufacturer's instructions and site procedures 2.6. Monitor lift operations to ensure compliance with equipment limitations
3. Perform crane operator maintenance	3.1. Inspect crane for faults in accordance with manufacturer's instructions and site requirements 3.2. Perform routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and site procedures 3.3. Process ***records*** in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate a gantry or overhead crane:

- apply legislative, organisation and site requirements and procedures for the operation of a gantry or overhead crane
- calculate volume, weights
- access interpret and apply technical crane information
- maintain crane equipment records
- use hand tools
- apply fault finding techniques with cranes
- comply with environmental requirements
- dispose of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate a gantry or overhead crane:

- Australian standards related to cranes/lifting
- site and equipment safety requirements
- crane equipment characteristics, technical capabilities and limitations
- crane operational procedures
- crane maintenance systems and procedures
- basic rigging and slinging requirements
- hand and whistle signals
- site environmental requirements and constraints related to cranes
- Hazchem relevant to overhead cranes

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the operation of a gantry or overhead crane • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the operation of a gantry or overhead crane • working with others to undertake and complete the operation of a gantry or overhead crane that meets all of the required outcomes • consistent timely completion of gantry or overhead crane operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of a gantry or overhead crane

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may include:	• shift briefings • handover details • work orders • crane equipment to be used • nature and scope of tasks • details of load chart/factors • achievement targets • working conditions • site lighting arrangements • defects on equipment • hazards and potential hazards • coordination requirements
Safety information and procedures may include:	• relevant legislation and regulations • relevant Australian standards • management plans • relevant OHS policy • relevant code of practice • manufacturer's instructions • safe working procedures • control and safety of travelling speed • selection and observance of safe working levels and angles • boarding and disembarking procedures • communications and signalling procedures
Prepare site may include:	• hazard identification and control • identification of load

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	• identification and selection of lifting equipment • inspection and certification of lifting equipment • management of permits and tags
Australian standards may include:	• AS2550 for cranes, hoists and winches • cranes and state based legislation and regulations • any relevant legislation
Hazards may include:	• environment • people • other equipment • dangerous materials • facilities
Signals may include:	• verbal • hand signals to Australian standards • whistles/hooters to Australian standards • two-way radio/telephones • light signals to Australian standards
Records may include:	• maintenance records • handover records • records of breaks • log books

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN306A Carry out lifting using multiple cranes

Modification History

Not applicable.

Unit Descriptor

This unit covers carrying out lifting using multiple cranes in the resources and infrastructure industries. It includes planning and preparing for a multiple lift and carrying out a multiple lift. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for multiple lift	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm work requirements in the form of ***shift briefings***, ***handover details or work orders*** before proceeding 1.3. Conduct ***work preparation*** in accordance with AS2550, legislation and manufacturers/site requirements 1.4. Carry out assembly and dismantling of boom/jib 1.5. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 1.6. Carry out crane pre-start, start-up, park-up and shutdown procedures 1.7. Position, stabilise and level cranes prior to commencement of multiple lift in accordance with relevant standards and specifications, and approved man-basket permit and use procedures
2. Carry out multiple lift	2.1. Obtain approval to carry out a multiple crane lift from the appropriate statutory authority 2.2. ***Plan multiple lift*** and obtain approval for lifting plan by an authorised person 2.3. Clarify and confirm multiple lift activities and responsibilities with the other crane operators 2.4. Carry out the multiple lift under the supervision of an authorised person in accordance with the appropriate standards, regulations and ***site safety requirements*** 2.5. Prepare load for lift in accordance with crane limitations and rigging requirements 2.6. Confirm the work area is clear and safe prior to commencing multiple lift 2.7. Interpret signals in accordance with AS2550 2.8. Use relevant ***crane controls and functions*** within manufacturer's specifications to

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	effectively lift and position loads 2.9. Act on or report monitoring systems and alarms 2.10. Recognise and respond to ***hazardous and emergency situations***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to carry out lifting using multiple cranes:

- apply legislative, organisation and site requirements and procedures for carrying out lifting using multiple cranes
- apply operational safety requirements
- access, interpret and apply technical information
- calculate volume, weights
- maintain equipment records
- apply fault finding techniques
- comply with environmental requirements
- dispose of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to carry out lifting using multiple cranes:

- Australian standards related to cranes/lifting
- site and equipment safety requirements
- crane equipment characteristics, technical capabilities and limitations
- multiple lift plans and planning
- multiple lifting operational procedures
- basic rigging and slinging requirements
- hand and whistle signals
- site environmental requirements and constraints related to crane operations
- hazardous chemicals
- emergency procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for carrying out lifting using multiple cranes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of lifting using multiple cranes • working with others to undertake and carrying out lifting using multiple cranes that meet all of the required outcomes • consistent, timely completion of carrying out lifting using multiple cranes that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete carrying out lifting using multiple cranes

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements and procedures
	• manufacturer's guidelines and specifications
	• Australian standards, including:
	  • AS2550
	  • cranes and state-based legislation and regulations
	• safety information and procedures
	• management plans
	• OHS policy
	• code of practice
	• manufacturer's instructions
	• safe working or job procedures
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Shift briefings/handover details/work orders may include:	• crane equipment to be used • nature and scope of tasks • details of load chart/factors • achievement targets • working conditions • site lighting arrangements • defects on equipment • hazards and potential hazards • coordination requirements/issues
Work preparation may include:	• selection of stable base • clarification of multiple lift procedure • avoidance of obstacles and hazards • identification of loads • identification and selection of lifting equipment • inspection and certification of lifting equipment • fitting of optional implements/accessories

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	• management of permits and tags
Plan multiple lifts may include:	• an assessment of the load to be carried by each crane • determination of the types of cranes suitable for use • the safety margins and hazard control measures to be used in the lift • the sequence of operations
Site safety requirements may include:	• control and safety of slewing speed • selection and observance of safe working levels and angles • avoidance of obstacles and hazards • boarding and disembarking procedures • observation of wind restrictions • communications and signalling procedures
Crane controls and functions may include:	• boom up • boom down • boom extensions • hoist up • hoist down • manual jib and fly-jib extensions • slew
Hazardous and emergency situations may include:	• accidents • injuries • power lines • trees • overhead service lines • bridges • surrounding buildings • obstructions • structures • facilities • other equipment • dangerous materials • earthworks • underground services • adverse weather conditions • time of day

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Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN307A Operate a vehicle loading crane

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of a vehicle loading crane in the resources and infrastructure industries. It includes planning and preparing for crane operations, operating and maintaining the crane, carrying out operator maintenance and cleaning up. The work required in this unit relates to the National Standard for High Risk Work. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for crane operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access and interpret ***work requirements*** and ***safety information and procedures*** prior to the commencement of work activity 1.3. Apply safety information and procedures throughout the work 1.4. Identify and implement signage and barricade requirements 1.5. Identify and select ***equipment*** to carry out tasks consistent with work requirements 1.6. Inspect selected equipment prior to the commencement of work and rectify or report defects that may affect its safe use 1.7. Perform pre-start, start-up, park-up and shutdown procedures and ***position vehicle*** in accordance with Australian standards, manufacturer's instructions and site procedures 1.8. Calculate quantity of load in accordance with plans, specifications, vehicle limitations and/or rigging requirements 1.9. Assemble and dismantle ***attachments*** in accordance with Australian standards, manufacturer's instructions and work requirements 1.10. Determine and implement ***no-go zones***, confirm work area is clear and identify and control crane operating hazards prior to the commencement of the lift 1.11. Identify ***environmental protection requirements*** and comply with the relevant statutory/regulatory authorities
2. Operate and maintain a loading crane	2.1. Lift and position loads or personnel using relevant ***crane controls*** within manufacturer's specifications 2.2. Direct crane operations using recommended ***load moving signals*** 2.3. Monitor load and crane hook movements and locations throughout the transfer 2.4. Identify and respond to emergencies in

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	accordance with manufacturer's instructions and site procedures 2.5. Identify and control ***crane operating hazards*** and respond to monitoring systems and alarms in accordance with site instructions 2.6. Complete work, shut down crane and return to its lock down position
3. Carry out operator maintenance	3.1. Perform daily/shift vehicle inspections and fault-finding in accordance with manufacturer's instructions, safety information and procedures and work requirements 3.2. Perform and record routine ***operational servicing*** and report any faults 3.3. Process records in accordance with site requirements 3.4. Record the results of daily/shift inspections, and report any defects
4. Clean up	4.1. Clear work area and dispose of reused or recycled materials in accordance with legislation/regulations/code of practice and job specification 4.2. Clean, check and store plant, tools and equipment in accordance with manufacturer's recommendations and standard work practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate a vehicle loading crane:

- apply legislative, organisation and site requirements and procedures for operating a vehicle loading crane
- apply vehicle loading crane operational safety requirements
- access and interpret technical information relevant to the operation and maintenance of a vehicle loading crane
- calculate volume weights
- maintain equipment records
- manage hand tools
- diagnose problems associated with a vehicle loading crane
- apply environmental constraints and procedures
- dispose of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate a vehicle loading crane:

- no-go areas in the vicinity of vehicle loading cranes
- never work under crane booms
- crane hook location and movement
- Australian standards related to loading cranes and lifting
- site and equipment safety requirements
- vehicle equipment characteristics, technical capabilities and limitations associated with loading cranes
- vehicle loading crane and other relevant operational procedures
- vehicle loading crane and other relevant maintenance systems and procedures
- basic geological and survey data knowledge relating to loading cranes
- basic rigging and slinging requirements
- hand and whistle signals related to loading crane operations
- site environmental requirements and constraints
- Hazchem relevant to loading cranes
- quality requirements relating to loading crane operations
- loading crane related plant, tools and equipment types, characteristics, uses and

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limitations • crane preparation and operational techniques • processes for the calculation of load mass requirements • materials safety data sheet • plans, drawings and specifications • safe handling and storage procedures • relevant acts, regulations and code of practice • JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the operation of a vehicle loading crane • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of vehicle loading crane operation • working with others to undertake and complete the operation of a vehicle loading crane that meets all of the required outcomes • consistent timely completion of vehicle crane operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of a vehicle loading crane

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may include:	• plans • specifications • quality requirements • operational details confirmed • coordination of activities with others • shift briefings • handover details • work orders • stable base • hazard control • identification of load • identification and selection of lifting equipment • inspection and certification of lifting equipment • fitting of optional accessories • management of permits and tags
Safety information and procedures may include:	• relevant legislation and regulations • relevant Australian standards including Australian standard AS2550 • safety plan • safety and health management system • relevant OHS legislation, code of practice and organisation policy • manufacturer's instructions • safe working procedures

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	• use of safety equipment
	• safe handling of hazardous materials and substances
	• use of fire fighting equipment
	• organisational First Aid
	• hazard identification and control measures
	• operational risk assessment associated with power cables
	• lighting
	• earth leakage boxes
	• trip hazards
	• dangerous materials
	• confined spaces
	• surrounding structures
	• restricted access barriers
	• traffic control
	• working at heights
	• working in proximity to others
	• worksite visitors
	• public
	• emergency procedures related to equipment such as:
	  • emergency shutdown
	  • emergency stopping
	  • extinguishing equipment fires
	  • evacuation from equipment
	• evacuation from worksite
	• truck mounted crane movements checked for safe operation
	• no work takes place under crane boom during crane operation

Equipment may include:	• plant suitable for the job • tools suitable for the job • materials suitable for the job • slinging equipment • truck mounted cranes
Position vehicle may include:	• stabilise • level • truck for mounted crane is positioned at drop off point • truck for mounted crane is level • truck mounted crane is activated and

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	manoeuvred to its operating position from its lock down position
Attachments may include:	• tyre manipulation • forks • any other commercially or site produced attachment
No-go zones may include:	• around operators control panel • any area where the crane should not be operated or slewed into
Environmental protection requirements may include:	• waste management • noise • dust • vibration • clean-up management
Crane controls may include:	• boom up • boom down • boom extensions • hoist up • hoist down • manual jib and fly-jib extensions • slew
Load moving signals may include:	• verbal • hand signals to Australian standards • whistles/hooters to Australian standards • two-way radio/telephone • light signals to Australian standards
Crane operating hazards may include:	• power lines • trees • overhead service lines • bridges • surrounding buildings • obstructions • structures • facilities • other equipment • dangerous material • earthworks • underground services • time of day
Operational servicing may include:	• lubrication • housekeeping tasks

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	• site authorised practices • minor maintenance in accordance with manufacturer's instructions and site requirements • inspections

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN308A Load and unload plant

Modification History

Not applicable.

Unit Descriptor

This unit covers loading and unloading plant in the resources and infrastructure industries. It includes planning and preparing, loading plant, and unloading plant. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** and ***safety requirements*** relevant to the work activity 1.2. Work instructions, plans, operational details are obtained, confirmed and applied to the work activity 1.3. The loading/unloading site is made safe and isolated from general traffic flow by appropriate barriers
2. Load the plant	2.1. The dimensions and capacity of the ***float or trailer*** to safely carry the plant item is confirmed 2.2. Tools and loading equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement 2.3. Preparation of the ***plant*** for transportation are confirmed as having been completed 2.4. Loading aids, including ramps and bridging materials, are placed and secured in accordance with the trailer or float specifications 2.5. Loading procedure is agreed to by operator and/or guide before loading commences 2.6. The plant item is moved onto the trailer or float and halted at the designated position
3. Unload the plant	3.1. Unloading procedure is agreed to by operator and/or guide agreed before unloading commences 3.2. Unloading aids, including ramps, are placed and secured in accordance with the trailer or float specifications 3.3. Securing devices are slackened and removed in a sequence which optimises safety 3.4. The plant item is moved off the trailer or float and halted at the designated position 3.5. Stow loading aids including ramps and bridging materials and securing devices for further use

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to load and unload plant:

- apply legislative, organisation and site requirements and procedures for loading and unloading plant
- apply operational safety requirements
- safely drive mobile plant
- access interpret and apply technical information
- calculate volume, weights
- maintain equipment records
- apply fault finding techniques
- comply with environmental requirements
- dispose of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to load and unload plant:

- site and equipment safety requirements
- understanding of required hand signals
- techniques and processes for preparing plant for transportation
- basic motion and restraint theory related to heavy plant on floats or trailers
- basic centre of gravity and balance theory related to heavy plant on floats or trailers
- types, operation, uses and imitations of load securing equipment
- site isolation and traffic control responsibilities and authorities
- materials safety data sheet
- levelling techniques
- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for loading and unloading plant • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of loading and unloading plant • working with others to undertake and complete the loading and unloading plant that meets all of the required outcomes • consistent timely completion of loading and unloading plant that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the loading and unloading plant

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • graphical instructions, signage, work schedules/plans/specifications, load tables, tie-down instructions and charts and materials safety data sheet (MSDS) • safe work procedures related to the loading and unloading of plant items from floats or trailers • regulatory/legislative requirements pertaining to the loading and unloading of plant items from floats or trailers • quality requirements including those relating to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• State or Territory legislation and regulations, organisational safety policies and procedures, and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment prescribed under legislation, regulation and workplace policies and practices • safe operating procedures that include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, securing

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	devices under strain, centre of gravity and balance requirements, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices that include but not be limited to ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • emergency procedures that include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
The **float or trailer** may include:	• of generic construction or purpose designed for a particular item or range of plant • normally have self loading aids although some may require an established drive on/off ramp
Plant may include:	• loaded and unloaded may be wheeled or tracked

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN309A Conduct telescopic materials handler operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting telescopic materials handler operations in the resources and infrastructure industries. It includes planning and preparing; conducting machine pre-operational checks; operating the telescopic materials handler; attaching, securing, lifting, carrying and placing materials; selecting, removing and fitting attachments; relocating the telescopic materials handler; carrying out machine operator maintenance; and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** and ***safety requirements*** relevant to the work activity 1.2. Work instructions, including plans, and operational details are obtained, confirmed and applied to the allotted task 1.3. Signage requirements are identified and obtained from the project traffic management plan and implemented 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, and are checked for serviceability and any faults are rectified or reported 1.5. ***Environmental protection requirements*** are identified from the project environmental management plan, and are confirmed and applied
2. Conduct machine pre-operational checks	2.1. Pre-start, start-up, park-up and shutdown procedures are carried out 2.2. Telescopic materials handler controls , brakes, attachments and other implements are checked for manoeuvrability, serviceability and faults are rectified or reported
3. Operate telescopic materials handler	3.1. Site ***hazards*** associated with ***telescopic materials handler*** operations are identified and safe operating techniques are used to minimise risk 3.2. Operating techniques for telescopic materials handler are identified and applied to achieve optimum output while achieving specified tolerances 3.3. Telescopic materials handler is operated to work instructions in accordance with company operating procedures
4. Attach, secure, lift, carry and place materials	4.1. ***Communication*** practices associated with transportation and lifting of materials are conducted and continued between parties 4.2. Weight of load is established 4.3. Slings and lifting gear are selected,

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	attached and used in accordance with ***safe working load requirements*** 4.4. Machinery is positioned ensuring stability and located to effectively shift materials according to job specifications 4.5. Load is shifted safely and effectively 4.6. Load is moved in accordance with conventional hand and audible signals
5. Select, remove and fit attachments	5.1. Attachment is selected for the task 5.2. Attachment is moved and fitted 5.3. Attachment is tested to ensure correct fitting and operation 5.4. Attachment is used in accordance with manufacturer's recommendations and design limits 5.5. Removed attachments are cleaned and stored in designated locations
6. Relocate the telescopic materials handler	6.1. Telescopic materials handler is moved safely between worksites, observing relevant codes and traffic management requirements 6.2. Telescopic materials handler is prepared for relocation in accordance with the manufacturer's specifications
7. Carry out machine operator maintenance	7.1. Telescopic materials handler is ***safely parked***, prepared for maintenance and shut down 7.2. Inspection and fault finding are conducted 7.3. Defective parts are removed and replaced safely and effectively 7.4. Regular programmed ***operator maintenance*** tasks are carried out
8. Clean up	8.1. Work area is cleared and materials disposed of or recycled 8.2. Plant, tools and equipment are cleaned, checked, maintained and stored

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct telescopic materials handler operations:

- apply legislative, organisation and site requirements and procedures for conducting telescopic materials handler operations
- apply operational safety requirements
- access interpret and apply technical information
- calculate volume, weights
- maintain equipment records
- apply fault finding techniques
- comply with environmental requirements
- dispose of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct telescopic materials handler operations:

- telescopic materials handler types, characteristics, technical capabilities and limitations
- site and equipment safety requirements
- techniques for calculating safe working loads
- telescopic materials handler and attachment operating techniques related to essential tasks
- processes for interpreting drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheet and materials handling methods
- project quality requirements
- methods of changing machine attachments
- safe operating techniques in all terrain
- basic earthworks calculations
- levelling techniques
- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting telescopic materials handler operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conduct of telescopic materials handler operations • working with others to undertake and conduct telescopic materials handler operations that meets all of the required outcomes • consistent timely conduct of materials handler operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of telescopic materials handler operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • environmental requirements including those outlined in organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management • quality requirements including dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction • graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, materials safety data sheet (MSDS) and diagrams or sketches • safe work procedures related to the operation of telescopic materials handlers on construction sites • regulatory/legislative requirements pertaining to telescopic materials handler operations and the environment • instructions issued by authorised organisational or external personnel • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• State or Territory legislation and regulations, organisational safety policies and procedures, and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment,

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	hazard control and hazardous materials and substances • personal protective equipment, which is to include that prescribed under legislation, regulation and workplace policies and practices • safe operating procedures, which are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • emergency procedures include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Tools and equipment may include:	• tools and equipment are to include hand tools, lifting equipment including chains and slings and maintenance equipment relevant to the telescopic materials handler
Attachments may include:	• various types of buckets, various types of material handling arms (jibs), various types of forklift attachments and carriages and lifting hooks
Hazards may include:	• but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials
Telescopic materials handler may include:	• (sometimes referred to as a 'telehandler') is a self-propelled wheeled machine with a hydraulically operated telescopic boom assembly. It is a versatile machine due to its manoeuvring capabilities, reach height and the varying types of attachments that may be fitted generally via the integral quick coupler. On some equipment there may also be outriggers fitted • tasks are to include lifting and carrying materials and may include forklift activities and working with front bucket attachments
Communication may include:	• communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions,

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	written instructions or instructions related to job/task • on site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
Safe working load requirements may include:	• equipment load charts are provided for each attachment fitted to telescopic materials handlers. For each attachment utilised correct understanding and use of the applicable load chart is mandatory
Safely parked includes:	• ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement
Operator maintenance may include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults. It may also include the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN310A Conduct crane operations underground

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting crane operations underground in the resources and infrastructure industries. It includes planning and preparing for operations, lifting and shifting loads, carrying out operator maintenance and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Check ***indicators*** and perform ***pre-start checks*** on ***equipment and attachments*** 1.4. Identify, address and report ***potential risks and hazards*** 1.5. Carry out start-up procedures 1.6. Communicate with other equipment operators and personnel using approved communication methods 1.7. Identify, address and report ***environmental issues*** 1.8. Scale loose material and make site safe 1.9. Use approved ***dust suppression and extraction methods*** 1.10. Ensure area is well ventilated before entry into work area
2. Lift and shift load	2.1. Determine rigging and slinging requirements after assessing site and load conditions 2.2. Determine lifting technique according to the nature of the load being moved and the required location 2.3. Operate equipment safely within work environment and equipment limitations whilst observing ***safe driving conventions*** 2.4. Monitor and manage equipment performance using appropriate indicators to aid efficient operations 2.5. Assess ***ground conditions*** and position equipment to maximise efficiency, ensuring stability of crane and safety of other equipment and personnel 2.6. Complete all required documentation clearly, concisely and on time 2.7. Pass on end of shift information to oncoming shift
3. Carry out operator	3.1. Carry out ***shutdown procedures***

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maintenance	3.2. ***Service*** and make minor adjustments to equipment 3.3. Visually inspect equipment and report faults and make equipment available for routine operational servicing
4. Conduct housekeeping activities	4.1. ***Clean*** equipment 4.2. Clean and store ancillary service equipment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct crane operations underground:

- apply legislative, organisation and site requirements and procedures for conducting crane operations underground
- perform dogging techniques
- perform driving techniques
- operate, maintain and clean equipment
- interpret ground conditions
- perform lifting techniques
- monitor loads
- use hand and power tools
- towing
- refuel vehicle

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct crane operations underground:

- towing methods
- refuelling vehicle

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting crane operations underground • implementation of requirements, procedures and techniques for the safe, effective and efficient conduct of crane operations underground • working with others to undertake and complete crane operations underground that meet all of the required outcomes • consistent timely conduct of crane operations underground that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of crane operations underground

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements and procedures dealing with:
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	  • emergency procedures
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Indicators may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • fuel filter • load indicator • parking brake • retarder • service meter • speedometer/odometer • spotter • steering filters • tachometer • torque converter oil temperature • transmission filter • voltmeter • water temperature
Pre-start checks may include:	• air filter restriction indicator • boom type • cab (horn, lights, air conditioner) • cab condition (no rags in air conditioner vent,

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	dirt around brake and accelerator pedals, seat condition, all gear secured) • cab mounts • capacity of equipment and/or attachments may include: • computer systems • crane capacity • damage to equipment • danger tags • display instrumentation and gauges (indicators, gauges, laser levels) • duration of operation • efficient and safe operating speed • engine and stop engine lights (orange and red) • engine oil to be checked before starting engine • fire suppression unit (pins in position in triggers) • fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • grease lines • job configuration • light positioning and cleanliness • no combustible material around exhaust • oil leaks (engine, hydraulic hoses, ground) fuel leaks (engine, on ground) • operating limitations • personnel proximity • portable fire extinguisher (bracket, gauge, hose, ease of access) • radiator top up tank • type of activities performed • tyres and rim condition • vehicle number • visual and audio warning devices and lights • water leaks (radiator, hoses) • weight and/or load limitations • wheel nuts and studs • windows (clean, emergency exit tag in place)
Equipment and attachments may include:	• attachment slings • bosun's chair • chain • cranes at various tonnages • dog work

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	• eye bolts • gantry • fixed overhead • integrated tool carriers • mechanical handling/lifting equipment • mobile cranes • overhead handling • pendant • pig sty • rigging (chains) • scissors • spreader bars • telescopic • recommended/required PPE
Potential risks and hazards may include:	• crane malfunction • dropping objects • unstable crane
Environmental issues may include:	• dust • fumes • noise • water
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Safe driving conventions may include:	• speed limits • mine lighting • site vehicle identification lights • right of way • parking in stockpiles • parking on incline/decline • refuelling procedures • rules at intersections • driving regulations, rules and conventions • towing methods
Ground conditions may include:	• broken ground • dry • location of water table • noise • slope of working surface

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	• stability of ground • stable ground (compaction) amount of scale • ventilation characteristics (fumes, dust) • visibility • wet
Shutdown procedures may include:	• correct location of equipment • safety mechanisms operational (horn, operating lights) • vehicle is left secured
Service may include:	• checking fluid levels • filter changing • greasing • keeping cab clean • tightening loose fittings
Clean may include:	• degreasing • forced air • steam cleaning • vacuum • water

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN401A Organise and monitor wharf/terminal operations

Modification History

Not applicable.

Unit Descriptor

This unit covers organising and monitoring wharf/terminal operations in the resources and infrastructure industry. It includes organising equipment, machinery and personnel; identifying, assessing and managing potential risks; monitoring work performance and progress; monitoring status of pending work; solving problems and making decisions; completing the shift and preparing for the next shift. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise equipment, machinery and personnel	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Organise equipment, machinery and personnel to facilitate the safe and efficient loading and unloading of the ship 1.3. Maintain liaison with supervisors to ensure the availability of adequate resources
2. Identify, assess and manage potential risks	2.1. Identify, address and report potential risks and hazards 2.2. Remove potential risks to safe and efficient operations from the work area or make other arrangements to ensure conditions for safe work 2.3. Advise supervisors of potential risks and maintain liaison until the risk has been removed
3. Monitor work performance and progress	3.1. Monitor work performance and progress to ensure work is performed in accordance with established guidelines and procedures and that safe work practices are maintained 3.2. Monitor and refine methods and procedures of work in consultation with supervisors and operational personnel 3.3. Monitor work performance rates with delays minimised to ensure work program objectives are met 3.4. Monitor work practices to ensure compliance 3.5. Monitor environmental conditions to ensure safe working conditions are maintained
4. Monitor status of pending work	4.1. Monitor the status of pending work, in order of priorities, taking into account the needs of the ship and the wharf/terminal
5. Solve problems and make decisions	5.1. Solve problems and make decisions to ensure optimum efficiency of operations 5.2. Resolve complaints and grievances where possible, at the point of work
6. Complete shift and prepare for next shift	6.1. Complete shift ensuring that a report summarising the shift is compiled and the

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	oncoming relief is informed of necessary details for the safe and efficient operation of the next shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to organise and monitor wharf/terminal operations:

- apply legislative, organisation and site requirements and procedures for organising and monitoring wharf/terminal operations
- establish plans
- describe consequences
- complete tasks
- identify improvements
- apply safety precautions relevant to the task
- assess operational capability of equipment used and work processes selected
- take account of work environment when planning and coordinating work
- use leadership skills to ensure a safe and efficient work area is maintained

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to organise and monitor wharf/terminal operations:

- site layout
- focus of operation of work systems, equipment, management and site operating systems
- impact of job on enterprise and individual performance
- application of relevant industrial requirements
- relevant bond, quarantine or other legislative requirements
- identification and correct use of equipment, processes and procedures used within context of the job
- modifying activities dependent on differing workplace contexts, risk situations and environments
- estimation of size, shape and special requirements of loads
- identification of container and goods coding, IMDG markings and, where applicable, emergency information panels
- identification of protective clothing and safety precautions appropriate to the task

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for organising and monitoring wharf/terminal operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of organising and monitoring wharf/terminal operations • working with others to organise and monitor wharf/terminal operations • evidence of the consistent successful organising and monitoring wharf/terminal operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to organise and monitor wharf/terminal operations
	  • provision of clear and timely instruction and supervision by the individual or those involved in the conduct of organising and monitoring wharf/terminal operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements, including:
	  • relevant OHS
	  • workplace relations
	  • workers compensation
	  • water and road use and license arrangements
	  • relevant license, patent or copyright arrangements
	  • relevant dangerous goods and air freight regulations
	  • export/import/quarantine/bond requirements
	  • marine orders
	  • environmental protection legislation
	  • emergency procedures
	  • relevant Australian and International Explosives Codes
	  • relevant certification requirements
	• procedures, including:
	  • hazard policies and procedures included code of practice
	  • issue resolution procedures
	  • job procedures and work instructions
	  • relevant guidelines relating to the use of machinery and equipment capability and limitation tagging of unserviceable or damaged items
	  • quality procedures (where existing)
	  • security procedures
	  • follow enterprise housekeeping processes
	  • waste, pollution and recycling management processes
	  • action taken promptly, accidents and incidents reported in accordance with statutory requirements and enterprise

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	procedures • recognise and adapts appropriately to cultural differences in the workplace, including models of behaviour and interactions among staff and others • work completed systematically with attention to detail without damage to goods, equipment or personnel • manufacturer's guidelines and specifications • Australian standards • relevant Australian and international regulations and code of practice for the handling and transport of dangerous goods and hazardous substances, including: • relevant Australian and International Dangerous Goods Codes, • relevant Australian Marine Orders and the International Maritime Dangerous Goods Code • relevant IATA's 'Dangerous Goods by Air' regulations • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN311A Conduct operations with integrated tool carrier

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of integrated tool carrier operations in the resources and infrastructure industries. It includes planning and preparing for work; lifting and moving loads; selecting, removing and fitting attachments; and carrying out post-operational procedures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations and other safety measures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work according to site procedures and relevant ***legislation*** 1.3. Receive, interpret and clarify shift changeover details 1.4. Select personal protective equipment and other ***safety*** measures appropriate for work activities 1.5. Select appropriate ***tools and equipment*** according to job type and specifications to maximise efficiency and effectiveness of work activities 1.6. Inspect and assess site conditions and take action according to site requirements 1.7. Perform equipment ***pre-start checks*** 1.8. Identify, address and report potential ***risks and hazards*** 1.9. Carry out start-up procedures according to manufacturer's specifications and site procedures 1.10. Communicate with other equipment operators and personnel using approved ***communication methods*** 1.11. Identify, address and report ***environmental issues*** 1.12. Adhere to emergency procedures in case of fire and/or accident according to manufacturer's guidelines and site procedures
2. Lift and move load	2.1. Operate equipment safely within ***work environment***, limitations, site conditions and capacity of equipment and attachments 2.2. Monitor and manage equipment performance using appropriate ***indicators*** to aid efficient operations 2.3. Assess ***site conditions*** and position equipment to ensure safety of other equipment and personnel 2.4. Establish weight of load and select appropriate slings and lifting gear

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	accordingly 2.5. Secure load utilising approved method to ensure stability of the load and equipment and safety of other equipment and personnel 2.6. Maintain safety of site by implementing appropriate safety provisions 2.7. Guide movement of equipment using approved signals 2.8. Complete all required documentation clearly, concisely and on time
3. Complete operations	3.1. Safely move integrated tool carrier between worksites, observing relevant codes and traffic management requirements 3.2. Prepare integrated tool carrier for relocation in accordance with the manufacturer's specifications 3.3. Safely park integrated tool carrier and prepare for maintenance and shutdown in accordance with manufacturer's manual and organisational requirements 3.4. Inspect integrated tool carrier for faults in accordance with manufacturer's specifications and/or organisational requirements
4. Select, remove and fit attachments	4.1. Select attachment for the task 4.2. Remove attachment, fit and test 4.3. Use attachment in accordance with manufacturer's recommendations and design limits 4.4. Remove and clean attachments and store in designated location
5. Carry out post-operational procedures	5.1. Inspect, fault find and report faults 5.2. Carry out routine ***operator servicing***, ***maintenance and housekeeping tasks*** 5.3. Maintain and process ***records and reports*** 5.4. Carry out regular programmed maintenance in accordance with manufacturer's and/or organisational requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct integrated tool carrier operations:

- apply legislative, organisation and site requirements and procedures
- interpret ground conditions
- use hand and power tools
- employ driving techniques
- use lifting techniques/tow
- refuel vehicle

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate an integrated tool carrier:

- site and equipment safety requirements
- techniques for calculating safe working loads
- materials safety data sheet and materials handling methods
- safe operating techniques in all terrain
- basic earthworks calculations
- site procedures
- geological and technical data (basic)
- equipment parking
- primary and secondary ventilation
- isolation procedures
- site safety requirements
- equipment safety requirements
- start-up and shutdown procedures
- operational procedures and checks
- equipment processes, technical capability and limitations
- lifting procedures/loading procedures
- slinging
- towing procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting integrated tool carrier operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of integrated tool carrier operations • working with others to undertake and complete the conduct of integrated tool carrier operations that meet all of the required outcomes • consistent timely completion of integrated tool carrier operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the integrated tool carrier operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include:	• site safety and health • site inspection • relevant OHS • explosives • environment

Safety (**OHS**) means:	• OHS requirements are to be in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and site or project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control, hazardous materials and substances
	• personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
	• safe operating procedures are to include the following:
	  • recognising and preventing hazards associated with underground and overhead services
	  • other machines
	  • personnel
	  • restricted access barriers
	  • traffic control
	  • working at heights

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	• working in proximity to others • worksite visitors and the public • safe parking practices including ensuring : • access ways are clear • equipment/machinery is away from overhangs and refueling sites, a safe distance from excavations and secured from unauthorised access or movement • hazards and risks including • uneven/unstable terrain • trees • fires • overhead and underground services • bridges • buildings • excavations • traffic • embankments • cuttings • structures • hazardous materials • ventilation • dust suppression may include: • watering down site • use of water trucks • mobile/fixed sprays • screens (vent doors, vent blinds) • ventilation bags operational emergency procedures related to this unit are: • emergency shutdown and stopping • extinguishing fires • organisational First Aid requirements • evacuation
Tools and equipment may include:	• lifting and maintenance equipment relevant to the integrated tool carrier
Pre-start checks may include:	• visual and audio warning devices and lights • engine and stop engine lights (orange and red) • fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel transmission)

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	• cab (horn, lights, air conditioner) • air filter restriction indicator • display instrumentation and gauges (indicators, gauges, laser levels) • computer system • vehicle number • danger tags • personnel proximity • tyres and rim condition/wheel nuts and studs • light positioning and cleanliness • radiator top up tank • oil leaks (engine, transmission, hydraulic hoses, on ground) fuel leaks (engine, on ground) • water leaks (radiator, hoses) • no combustible material around exhaust • damage to equipment • portable fire extinguisher (bracket, gauge, hose, ease of access) • fire suppression unit (pins in position in triggers) • cab mounts • windows (clean, emergency exit tag in place) • engine oil to be checked before starting engine • grease lines • cab condition (no rags in air conditioner vent, dirt around brake and accelerator pedals, seat condition, all gear secured)
Risks and hazards may include:	• equipment malfunction • unsafe ground • adjoining pit walls • road conditions • rocks • pot holes • spillage • decline traffic • visibility • unauthorised personnel • mount dismount injuries
Communication methods may include:	• signage • hand signals • horn and/or whistles • radio

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	• telephone • lights • written and verbal • flags • emergency communication and signalling procedures
Environmental issues may include:	• dust • fumes • noise • water
Work environment may include:	• confined spaces • working within capacity of equipment • road clearances • ample vision
Indicators may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • service meter • speedometer/odometer • tachometer • oil temperature • voltometer • water temperature
Site conditions may include:	• wet • dry • stability of ground • broken ground • stable ground (compaction), amount of scale • slope of working surface • location of water table • ventilation characteristics (fumes, dust) • visibility • noise
Operator service, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• cleaning, • authorised servicing and the monitoring • recording and reporting of faults • conduct of authorised minor replacements • provision of assistance to maintenance personnel during maintenance and repair activities

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Records and reports may include:	• fuel usage • computer readings • end of shift documentation • supplies logs • work logs stockpile information • quality information • despatch details

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIHAN402A Process movement of containers and cargo

Modification History

Not applicable.

Unit Descriptor

This unit covers processing the movement of containers and cargo in the resources and infrastructure industry. It includes checking the stacking/discharge list at commencement of shift, assessing and planning container/cargo consolidation, allocating and accommodating movement between stack positions, identifying and checking containers/cargo, checking and completing documentation, issuing gate passes and checking clearances. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Check stacking/discharge list at commencement of shift	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Check yard stacking/discharge lists against container/cargo ***documentation*** and operational order or work, taking into account both ship and shore operations 1.3. Continually update stacking discharge lists to reflect the correct location of containers and cargo
2. Assess and plan container/cargo consolidation	2.1. Assess yard plans and, where appropriate, plan consolidation of container/cargo within the yard 2.2. Prepare consolidation plans are to ensure efficient use of available yard space 2.3. Prepare consolidation plans to ensure efficient use of operation 2.4. Obtain final yard positions from consolidation plans and record
3. Allocate and accommodate movement between stack positions	3.1. Allocate stack positions according to the nature of the container/cargo and to facilitate yard operations 3.2. Reassign stack positions where necessary to accommodate additional cargo
4. Identify and check containers/cargo	4.1. Identify containers/cargo and check at the point of entry to the yard and prior to stacking to ensure no damage to container or cargo, and to ensure agreement between numbers and marks on container/cargo and shipping documentation 4.2. Follow stacking plans and facilitate efficient movement within the yard
5. Check and complete documentation	5.1. Check documentation prior to performing completion procedures ensuring compliance
6. Issue gate pass and check clearances	6.1. Issue gate pass to carrier when all documentation requirements have been completed including customs clearance 6.2. Check documentation ensuring that all necessary signatures are on the prepared delivery sheets, confirming that container/cargo meets all requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to process movement of containers and cargo:

- apply legislative, organisation and site requirements and procedures for processing the movement of containers and cargo
- establish plans/complete tasks
- identify improvements
- apply safety precautions relevant to the task
- assess operational capability of equipment used and work processes selected
- interpret organisational and statutory operating requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to process the movement of containers and cargo:

- site layout stacking plans and available stacking space
- focus of operation of work systems, equipment, management and site operating systems
- impact of job on enterprise and individual performance
- application of relevant industrial requirements
- identification and correct use of equipment, processes and procedures used within context of the job
- modifying activities according to workplace contexts, risk situations and environments
- estimation of size, shape and special requirements of loads
- identification of container and goods coding, IMDG markings and, where applicable, emergency information panels
- eye-hand coordination

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for processing the movement of containers and cargo • implementation of requirements, procedures and techniques for the safe, effective and efficient processing of the movement of containers and cargo • working with others to process the movement of containers and cargo • evidence of the consistent successful processing of the movement of containers and cargo
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to process the movement of containers and cargo
	  • provision of clear and timely instruction and supervision by the individual of those involved in the processing the movement of containers and cargo

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislation, including:
	  • relevant OHS
	  • workplace relations
	  • workers compensation
	  • relevant water and road use and license arrangements
	  • relevant license, patent or copyright arrangements
	  • relevant dangerous goods and air freight regulations
	  • export/import/quarantine/bond requirements
	  • marine orders
	  • relevant environmental protection legislation
	  • emergency procedures
	• organisation and site requirements and procedures, including:
	  • code of practice
	  • issue resolution procedures
	  • job procedures and work instructions
	  • relevant guidelines relating to the use of machinery, equipment capability and limitations
	  • quality procedures
	  • security procedures
	  • action taken promptly, accidents and incidents reported in accordance with statutory requirements and enterprise procedures
	  • work completed systematically with attention to detail without damage to goods, equipment or personnel
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability

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	Discrimination legislation
Documentation may include:	• goods identification numbers and codes • manifests, bar codes, goods and container identification • manufacturer's specifications • enterprise operating procedures and policies • supplier and/or client instructions • materials safety data sheet • phone, electronic data interchange, fax, e-mail, internet, radio, oral, aural or signed communications • relevant code of practice including the national standards for manual handling and the industry safety code • relevant legislation, regulations and related documentation • award, enterprise bargaining agreement, other industrial arrangements • relevant standards and certification requirements • quality assurance procedures

Unit Sector(s)

Load Handling

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIIMG301A Maintain site records

Modification History

Not applicable.

Unit Descriptor

This unit covers the maintenance of site records in resources and infrastructure industries. It includes: identifying records, processing details; and reviewing and filing records.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify records	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain multiple copies of ***records*** to match job requirements 1.3. Identify and comply ***with document storage***, ***filing and handling*** requirements 1.4. Check ***registered documents*** against register 1.5. Report or replace missing registered documents according to organisation policy 1.6. Recognise and adhere to ***quality assurance requirements*** of company operations 1.7. Select ***equipment*** that is consistent with the task of maintaining site records, check for serviceability and rectify or report any faults
2. Process details	2.1. Accurately and legibly record details in accordance with organisation instructions 2.2. Record details to specified quality control procedures 2.3. Ensure alterations to records are initialed by the responsible person 2.4. Record signatures, dates and times as per organisation procedures 2.5. Ensure records/entries are counter signed as per organisation procedures checked to ensure currency of information
3. Review and file records	3.1. Ensure records are referred to for ***historical data*** 3.2. Make records available to authorised personnel for checking purposes 3.3. Bring ***trends*** indicated by records that affect work in progress to the attention of appropriate personnel 3.4. Process and file records in accordance with company procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to maintain site records:

- apply legislative, organisation and site requirements and procedures
- communication skills required to explain and clarify procedures, and to interview users to identify their records/information needs
- literacy skills to read and interpret nature of record content, functions and problems
- problem-solving and analysis skills to identify and manage records

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to maintain site records:

- basic records management systems and processes (both manual and computer aided)
- records filing and retrieval systems and processes
- registered document control systems
- site diary systems
- quality control administration
- environmental record requirements
- inventory control record systems
- project quality requirements
- civil construction terminology
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for the maintaining of site records
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the maintaining of site records, including: minimum of one significant civil construction project including:
	  • site diary
	  • materials received and dispatched
	  • quality records
	  • OHS records
	  • environmental records
	  • inventory control records
	• working with others to undertake and complete the maintaining of site records that meets all of the required outcomes
	• consistent timely completion of the maintaining of site records that safely, effectively and efficiently meets the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the maintaining of site records

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Records may include:	• site diaries
	• materials received or dispatched
	• incidents on site which may be subject to investigation or query at a later date
	• quality management records
	• OHS records
	• environmental records
	• inventory control records
	• records required by regulation or legislation
	• drawings, which may include:
	  • site plans
	  • locality plans
	  • cross sectional plans
	  • longitudinal plans
	  • structural detail
	  • specification providing illustrations and dimensions and project plans, drawings and specifications
	• plans and specifications, which may include:
	  • detail relating to materials and quality of work
	  • quality assurance
	  • nominated sub-contractors
	  • provision of site access/facilities
	  • cost

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	• details relating to performance including: • standards of work • work schedules • standard procedures and practices
Document storage, **filing and handling** systems may include	• paper based systems • electronic systems
Registered documents are to include:	• permits • other regulatory requirements
Quality assurance requirements may include:	• dimensions • tolerances • standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Equipment is to include:	• record filing and retrieval systems (manual and computer aided) • stationery
Information sources may include	• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets (MSDS) and diagrams or sketches • safe work procedures or equivalent related to maintaining site records • regulatory/legislative requirements pertaining to maintaining site records • manufacturers' specifications and instructions • organisation work specifications and requirements • instructions issued by authorised organisational or external personnel • relevant Australian Standards
Historical data may be referred to for comparing:	• quantities • costs • equipment usage • timeframes • material types
Trends indicated by records may include	• time spent in activities • equipment requirements • material usage

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Unit Sector(s)

Information Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIILAT401A Provide leadership in the supervision of Indigenous employees

Modification History

Not applicable.

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to provide supervision, support and leadership to work teams which include Indigenous Australian employees. This unit should be regarded as an addition to general team supervision and leadership in its focus on awareness and knowledge of Indigenous culture and the application of skills to effectively lead and support Indigenous and diverse work teams. This unit may apply to supervisors who work in partnership with a dedicated workplace mentor.

Application of the Unit

This unit is appropriate for those working in a supervisory role in any industry sector and may be contextualised for use in a range of culturally diverse workplace settings.

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify the support requirements for Indigenous employees	1.1. Determine the scope and boundaries of the ***supervisory role*** in line with organisation policies, procedures and objectives in the employment and supervision of Indigenous employees 1.2. Identify the strengths and ***support*** requirements of Indigenous employees 1.3. Establish realistic ***expectations and conditions*** with ***stakeholders*** through negotiation 1.4. Discuss the benefits of mentoring with stakeholders and establish agreement on ***relationships and conditions*** 1.5. Identify and explore cultural factors, obligations and potential conflict using ***appropriate networks*** to effectively support and lead work group 1.6. Apply a framework for ***performance expectations*** consistent with the organisation's objectives, values and practices
2. Facilitate support for Indigenous employees	2.1. Use a range of strategies to support, report on and promote the development of Indigenous team members in the work role and environment 2.2. Develop work practices that acknowledge diversity and encourage team members to develop empathy, respect, and collaboration 2.3. Provide encouragement and advice to support ***decision making*** which is consistent with personal and workplace goals and career development 2.4. Use appropriate networks to provide assistance to team members 2.5. Provide information, guidance and constructive feedback incorporating reflective practice to enhance engagement in the workplace 2.6. Address ***cultural differences***, and personal and workplace ***barriers*** consistent with maintaining positive support and

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	relationships
3. Monitor individual and team performance and relationships	3.1. Provide planning guidance and support in a form and style to suit team member and workplace requirements 3.2. Provide regular and consistent feedback on progress towards achieving agreed expectations and personal and workplace goals 3.3. Recognise and negotiate ***changes*** in behaviour, expectations and outcomes with appropriate stakeholders 3.4. Recognise potential and experienced ***tension and conflict*** and seek advice and support to provide resolutions 3.5. Consult with team, other supervisors, mentors, and management to ensure corporate, workplace, team and individual goals are achieved
4. Provide advice on the effectiveness of support strategies for Indigenous team members	4.1. Identify and analyse the benefits of culturally effective leadership in relation to ***work practices***, ***objectives and workplace outcomes*** 4.2. Identify and recommend ***strategies*** to achieve individual and organisational objectives 4.3. Identify and report on the ***benefits*** and barriers in policies and practices for supporting Indigenous employees and make recommendations for improving individual and organisational outcomes

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to demonstrate leadership in the supervision of Indigenous employees:

- Communication:
  - use a range of strategies including active listening, questioning, determining comprehension, giving and receiving feedback
  - use direct, indirect and searching questions
  - use visual representations and plain English strategies to overcome literacy and numeracy issues
  - use stories and case studies to increase understanding and empathy
  - adapt to different communication styles, tone of voice and language code switching (where different languages are mixed)
  - support team members in developing their communication skills
  - interpret and use body language and culturally determined gestures
- Teamwork:
  - establish the role of supervision and leadership in a culturally diverse team
  - select appropriate strategies to influence and motivate individual performance and workplace outcomes
  - negotiate development plans with individual team members to promote team and autonomous work practices
  - seek advice from experienced team members and cultural experts
  - build relationships including building trust, inclusiveness and maintaining confidence in team members
  - respond to cultural diversity in the community and workplace
- Problem solving:
  - accommodate, address or resolve differences in areas of complex and sensitive cultural requirements and expectations
  - demonstrate cross cultural negotiation and conflict resolution
  - support team members to address and resolve their issues and problems
- Initiative and enterprise:
  - provide flexible and adaptable role modelling and mentoring
  - advocate with colleagues and management
  - interpret and respond to the cultural basis for different behaviour and responses
- Planning and organising:
  - plan performance feedback and development opportunities

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- select the right time and place for personal feedback
- network, consult and facilitate with relevant stakeholders
- network, consult and facilitate in different cultural contexts
- monitor, review and record management plans

- Self management:
  - develop cultural empathy and respect
  - develop self awareness and reflection on your own personal cultural identity and values
- Learning:
  - confirm workplace policies and practices
  - reflect on supervision, role model and mentoring practice
  - assist and coach others
  - meet the training needs of team members using appropriate training strategies, depending on the skill needs of individuals
  - increase cultural knowledge and experiences
  - take advice from experts inside and outside the workplace
- Technology:
  - maintain current information on the impact of new technologies on team members
  - use appropriate technology to enhance the development of team members

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to demonstrate leadership in the supervision of Indigenous employees:

- organisation's policies and procedures relevant to supervising Indigenous employees
- relevant commonwealth and state legislation
- historic and contemporary local Indigenous issues including:
  - participation in family and community rituals and celebrations
  - responsibilities for wider family members
  - concepts of time
  - traditional authority and power
  - concepts of ownership and property
  - relationship to land and traditional ownership
- cultural climate and politics of individuals and teams
- concepts of cultural identity including:
  - home and land
  - welcome to country
  - kin relationships

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- language
- skin group
- position and status in family and community
- loss of identity
- grief and sorry business
- impact of stolen generation
- impact of colonisation including:

- loss of cultural identity
- forced removal of children
- forced resettlement
- mission values
- urbanisation
- dispossession
- denigration
- cultural values including:
- shared property
- child raising
- taboos
- obligations
- key stakeholders and agents in the organisation, the community and Indigenous networks
- use and role of language in cross-cultural communication
- issues of power and influence in cultural differences
- customs, language and environment of the dominant and traditional cultures
- conditions and requirements of employment contracts and agreements
- training plans and responsibilities
- mentoring methods and strategies
- acceptable behaviour in supervision including ethical practices, code of conduct, boundaries and confidentiality
- strategies and options for skills, learning support and career development
- team relationships and dynamics
- impact of values on culture and relationships
- awareness of the applications of workplace technology and its relevance to the work team
- occupational health and safety issues related to supervision responsibilities

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the ability to: • prepare personal development plans in partnership with Indigenous team members that reflect both individual and organisational goals and performance outcomes • monitor and review the performance and development of Indigenous team members through performance feedback and addressing barriers to progress • identify and respond to cultural needs, obligations, identity and values • address potential and experienced conflict in the workplace • identify community networks, and liaise with relevant workplace networks to provide support and resources for Indigenous team members • report and recommend on effective support and outcomes for Indigenous team members
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires resources that reflect a culturally diverse environment that includes Indigenous employees. Selection and use of resources for particular worksites may differ due to the site circumstances and local Indigenous issues.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required. It is recommended that this unit be assessed with advice from appropriate Indigenous cultural advisers who may be included on an assessment panel.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical applications using more than one of the following assessment methods:
	
	• written and/or oral assessment of the candidate's required knowledge of specific cultural issues and strategies in undertaking the support and supervision of individual Indigenous employees and diverse work teams. This may include case studies to demonstrate the candidate's ability to develop strategies for effectively supporting and supervising diverse groups in particular industry and cultural contexts.
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the

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	selection of individual and group process management that best meet the required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the support and supervision of individual Indigenous employees and diverse work teams • provision of clear and timely required support and advice on the management of Indigenous employees and diverse work teams
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Supervisory role may include:	• team leadership
	• cultural leadership
	• positive role modelling
	• mentoring
	• training
	• assessment
	• performance management
	• offering a wide range of support oriented to:
	  • achieving work related goals
	  • individual and team development
	  • guidance in personal or career growth
	  • advice in adjusting to a culturally different work environment
	  • positive reinforcement and guidance
	  • positive role modelling
	  • workplace cultural support and advocacy
	• identifying and applying relevant organisational policies, procedures and ethical standards
	• developing and working with culturally diverse supporting networks
	• establishing open working relationships
	• identifying aspects of the work environment that may contribute to cultural conflict
	• working with individuals to identify:
	  • goals and objectives
	  • strengths
	  • barriers to workforce participation
	  • support networks
	• providing appropriate support to achieve personal and career goals

Support may include:	• information, strategies and resources oriented to: • successfully adjusting to a culturally

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	different work environment • achieving skills development and work related goals • individual and team development • personal or career growth • positive reinforcement and guidance • positive role modelling • workplace cultural support and advocacy • mentoring • referral to specialist support agencies including: • health • drug and alcohol services • language, literacy and numeracy • financial • accommodation • family • transport
Expectations and conditions may include:	• requirements of policies and procedures • job descriptions and employment conditions • workplace code of conduct • training and competency assessment • agreement on the role of mentoring and role models • active involvement of parties in the goal setting process and the development and review of personal management plans • relevant relationships with family and community • relationship with team members and management
Stakeholders may include:	• industry experts • trainees • management • trainers • community leaders and members
Relationships and conditions may include:	• informal workplace development program based on support from personal relationships • formal mentoring process associated with a contracted apprenticeship or traineeship, involving a formal training and development plan

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	• the role of buddies, peer support and role models • individual management plans • performance management and feedback

Appropriate networks may include:	• advisors with special knowledge of cultural practices, history, relationships and obligation relevant to members of the work team including:
	  • leaders in the relevant culture community
	  • team members belonging to the culture
	  • special culture consultants
	  • human resource consultants
	  • role models
	  • mentors
	  • trainers
	  • wellbeing services
	  • health, drug and alcohol monitoring services

Performance expectations may include:	• individual management plans • agreed performance standards • individual and team goals and targets • skills development and competencies • personal and team objectives and productivity • career opportunities and development
Decision making may include:	• personal and family aspirations • work experiences • further training and education • career development and progression • application for promotion positions • consensus decision making • financial security

Cultural differences may include:	• the effects of the history of contact between Indigenous and European cultures and its impact on current cross cultural issues including:
	  • traditional lifestyle and values
	  • cultural cohesiveness and divisions
	  • racism
	  • assumptions
	  • stereotyping
	• differences specific to individuals and

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	communities including: • work and family values • ways of communicating • language • individual and collective responsibilities • taboos and prohibitions • death in family or community • personal and workplace expectations • experiences with drugs and alcohol • experience with the justice system • relationships and communication between members of a culture group • relationships and status in the community and the workplace • family history, connections and responsibilities • cultural knowledge and influence • cultural politics • tribal justice • ceremonies • sorry business
Barriers may include:	• confusion and conflict • misunderstandings • discrimination and stereotyping • perceived and real inconsistencies in behaviour and treatment • poor self esteem, social withdrawal and isolation • conflict between work and family expectations and obligations • avoidance relationships within kinship systems such as poison cousins • poor literacy and numeracy • feelings of shame and inadequacy • limited exposure and experience • conflict of values • language • different learning and working styles • workplace culture
Changes may include:	• adjustments to individual management plan • alternative duties and rosters

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	• different mentoring arrangements • different levels of support and resources • implementing recommendations from advisors • adjustments in response to personal and family obligations • work locations • accommodation • financial management • new training and work experiences
Tension and conflict may include:	• perception of nepotism and favouritism • racism • clash of values • inconsistent behaviour and responses • failure of communication • conflicting expectations • false or misleading assumptions • stereotyping • concepts of identity • concepts of belonging and group behaviour
Work practices, **objectives and workplace outcomes** may include:	• work routines and timeframes • management and supervision • roles and responsibilities • compliance with policies and procedures • relationship with authority • work effectiveness and behaviour • levels of literacy and numeracy • communication • employee retention • induction, training and skills development • career progression
Strategies may include:	• taking time to develop personal relationships and trust with individual team members • developing trust and credibility through honest and reliable communication and actions • fair and open feedback and advice • taking account of personal styles in learning and working • flexible allowances made in times and rosters • separating or combining individuals and groups • clarification and review of objectives • negotiated individual management plans • recognising and acknowledging good work

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	performance • respecting confidences and personal sensitivities • taking the initiative when team members don't promote themselves • being aware of personal and family needs and issues • building networks with communities • seeking and respecting advice and leadership from cultural experts • recognising and rewarding talent
Benefits may include:	• increased levels of commitment, engagement and confidence • team harmony and mutual respect • increased productivity and worksite safety • development of workplace competence and self-confidence • skills recognition and job satisfaction • improved retention and career progression • developing insight into organisational culture, attitudes and expected behaviours • supportive environment in which strengths, weaknesses, successes and failures can be evaluated • improved networking opportunities and support • improved relations with local communities

Unit Sector(s)

Leadership and Teamwork

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIILAT601A Manage group processes

Modification History

Not applicable.

Unit Descriptor

This unit covers management of group processes in the resources and infrastructure industries. It includes developing working relationship frameworks and processes, negotiating work plans with teams and individuals, and managing inter-group and intra-group processes. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop working relationship frameworks and processes	1.1. Access, interpret and apply ***compliance documentation and requirements*** relevant to the work activity 1.2. Analyse the organisational and worksite culture and work environment and develop an appropriate ***management style*** 1.3. Conduct ***consultation*** and ***negotiation*** about proposed activities at appropriate times and in a manner which encourages open, frank discussion 1.4. Identify and analyse the benefits that can be achieved from the diversity of individuals to enhance workplace harmony 1.5. Establish processes designed to ensure employee participation in decision making 1.6. Provide timely information about organisational plans and activities, emerging threats and opportunities at a level and pace appropriate to the individuals concerned 1.7. Develop processes and ground rules to ensure that people at the worksite are treated with respect 1.8. Honour commitments and undertakings entered into with employees 1.9. Provide employees with sufficient support to achieve work objectives 1.10. Discuss evaluation of work and workplace behaviour directly with the individual concerned and maintain the confidentiality of the feedback given 1.11. Provide reports on activities, progress, results and achievements in a timely and accurate manner 1.12. Ensure that proposals for action are clear and realistic 1.13. Take constructive efforts to resolve disagreements and maintain good working relationships to ensure work objectives are met and workplace harmony maintained
2. Negotiate work plans with	2.1. Plan work targets from organisational and

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teams and individuals to achieve objectives	worksite goals 2.2. Plan work methods to maximise the use of available ***resources*** 2.3. Assess the degree of direction required by individuals and use to best effect in overall work planning 2.4. Agree to realistic work targets with individuals and teams to optimise the use of resources and existing competencies of personnel 2.5. Design work targets and methods to ensure that the worksite's objectives are achieved 2.6. Clearly define and record team and individual responsibilities and limits of authority 2.7. Ensure that allocated work activities provide individuals with suitable learning opportunities
3. Manage inter-group and intra-group processes	3.1. Promote clear and relevant work values indicating the limits of acceptable practice 3.2. Promptly identify potential and actual conflicts between personnel and take actions to deal with them as soon as is practicable 3.3. Resource problems and conflicts adequately to achieve timely resolution 3.4. Handle differences of opinion in ways that minimise offence and conflict to ensure respect is maintained 3.5. Apply disciplinary sanctions where necessary

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to manage group processes:

- apply legislative, organisation and site requirements and procedures for managing group processes
- set objectives and create cultures which are ethical
- clearly identify and raise ethical concerns relevant to your worksite
- work towards the resolution of ethical dilemmas based on reasoned approaches
- actively build relationships with others
- make time available to support others
- provide feedback designed to improve people's future performance
- show sensitivity to the needs and feelings of others
- keep others informed about plans and progress
- identify the information needs of listeners
- adopt communication styles appropriate to listeners and situations, including selecting an appropriate time and place
- reconcile and make use of a variety of perspectives when making sense of a situation
- produce ideas from experience and practice
- take decisions which are realistic for the situation
- focus on facts, problems and solutions when handling an emotional situation

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to manage group processes:

- industrial awards/enterprise agreements
- advanced negotiation techniques
- human resource management
- strategic planning
- resource quantification
- organisational change and development
- OHS
- statutory and site rules, policies, procedures and regulations
- assertive techniques
- risk management processes and techniques

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- action planning methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for managing group processes • implementation of procedures and techniques for the safe, effective and efficient management of group processes • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of group process management that best meet the required outcomes • working with other to undertake and complete the management of group processes • consistent successful management of group processes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical applications using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge in undertaking the management of group processes
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of group process management that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the management of group processes provision of clear and timely required support and advice on the management of group processes

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation and requirements may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • common law • dangerous goods • development of training policies/programs • industrial relations • industry licensing • local government • mines acts • navigation • planning and assessment • trade practices • waterways • weights and measures • workers compensation/WorkCover • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Management operates within:	• human resource policies and practices including interviewing, counselling, dispute settling and discipline • enterprise/industrial agreements/awards • training and development principles and practices • work schedules may include shift work and varying hours of duty • environments ranging from simple to complex and diverse • productivity and profitability objectives and targets • appropriate policies, guidelines and processes • a level of autonomy which may range from

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	limited to substantial • legislation, codes and practices • resource parameters which may be defined or negotiated • quality and continuous improvement processes and standards • business and performance plans • ethical standards established by the organisation • best practice and benchmarking principles and practices • financial accountability including profit and loss statements
Management may assume varying roles including:	• leader • coach • facilitator • mentor • participant • director • trainer • assessor
Management will typically make decisions to:	• influence operational performance • maintain statutory/legal compliance • plan production schedules • maximise production and minimise operating costs/risks and non-conformances • analyse and review market/production predictions and costs • manage projects and tasks
Consultation may typically include:	• employees • regulatory authorities • tenderers/project managers • contractors • community • customers • suppliers
Negotiation may be with a variety of internal or external sources and be:	• formal or informal • short term or ongoing • multi-lingual and cross-cultural • enterprise agreements • legislation regulation compliance and include relative authorities, project managers,

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	employees, contractors, customers and the community
Resources may include:	• finance • equipment • environment • buildings/facilities • technology • information • people

Unit Sector(s)

Leadership and Teamwork

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCO201A Conduct spreader operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of spreader operations in the coal industry. It includes planning and preparing for operations, operating the spreader, relocating the spreader, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply geological and survey data required to complete the allocated work
2. Operate **spreader**	2.1. Coordinate activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up and shutdown procedures 2.3. Operate spreader controls to place burden 2.4. Act or report on monitoring systems and alarms 2.5. Recognise and response to ***hazardous and emergency situations*** 2.6. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment
3. Relocate **spreader**	3.1. Receive and confirm route and location plan, if necessary by site inspection 3.2. Complete ***ground preparation*** 3.3. Carry out cable location and handling 3.4. ***Coordinate issues***, including support equipment and personnel
4. Carry out operator maintenance	4.1. Carry out spreader inspections and fault-finding 4.2. Carry out routine operational servicing, lubrication and housekeeping tasks 4.3. Carry out minor maintenance 4.4. Provide operator support during preparation for, and conduct of, major maintenance tasks 4.5. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct spreader operations:

- apply legislative, organisation and site requirements and procedures for conducting spreader operations
- apply legislative, organisation and site requirements and procedures for conducting spreader operations
- apply operations safety requirements
- access, interpret and apply technical information
- apply hand-eye coordination
- work at heights
- apply diagnostic techniques
- use relevant hand tools
- apply environmental constraints in spreader operations
- maintain equipment records
- dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct spreader operations:

- site and equipment safety procedures
- site operational procedures
- spreader equipment characteristics, technical capabilities and limitations
- spreader operational procedures
- site environmental requirements and constraints related to spreader operations
- hazard identification and response procedures
- spreader maintenance systems and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting spreader operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of spreader operations • working with others to undertake and complete the spreader operations in a way that meets all of the required outcomes • consistent timely completion of spreader operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the spreader operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Shift details may include:	• nature and scope of the work • working conditions • achievement targets • site lighting arrangements • defects on equipment • hazards and potential hazards • coordination details
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice • manufacturer's instructions • safe working procedures (or equivalent) • specific safety requirements, , including: • boarding disembarking procedures • identifying and confirming potential hazards • relocating • operational signal procedures
Hazardous and emergency situations may include:	• sinking • spoil and highwall stabilisation • wet weather operation • electrical start-up and shutdown

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	• belt system fires • electrical fires • windy and dusty conditions • working in close proximity and moving equipment and parts
Ground preparation for spreader relocation may include:	• pads • roads • rolls • cable routes • ramps
Coordinate issues may include:	• communication with personnel • an awareness of other support plant and equipment
Spreader operations may include:	• positioning • discharging • selective placement of materials as part of low dumping, high dumping and capping
Operator maintenance procedures are:	• those established and authorised for the site

Unit Sector(s)

Coal Mining (Open Cut)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCO202A Conduct mobile slew conveyor operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of mobile slew conveyor operations in the coal industry. It includes planning and preparing for operations, operating the mobile slew conveyor, carrying out operator maintenance, and carrying out inspection, testing and reporting. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Conduct ***pre-start checks*** in accordance with ***safety requirements*** 1.3. Inspect and plan route to be travelled, identify new hazardous conditions and implement control measures 1.4. Prepare for work, including avoidance of obstacles and ***site hazards*** 1.5. Position ***mobile slew conveyor*** accurately, safely and stabilise prior to commencement of ***operations*** 1.6. Prepare mobile slew conveyor for operation in accordance with machine limitations and digging conditions 1.7. Observe ***safety rules and regulations***, including mine manager's rules, legislation and site-specific instructions
2. Operate mobile slew conveyor	2.1. Identify ***hazards*** and where possible implement control measures 2.2. Carry out start-up, park and shutdown procedures 2.3. Plan work and confirm work area as clear and safe prior to commencing ***operations*** 2.4. Carry out travel and steering in unison with excavator and hopper within operating and safety limits 2.5. Operate relevant ***mobile slew conveyor*** controls and functions from stationary mode , including - boom up, boom down, hoist up, hoist down, travel slew, to effectively lift and position loads 2.6. Relocate mobile slew conveyor to new location in mine 2.7. Monitor and act on fault indicator/enunciator panel 2.8. Carry out emergency procedures 2.9. Complete loading and discharge in accordance with the agreed plan and outcomes and within the optimum operating capacities of the allocated equipment

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	2.10. Operate controls to transfer loads
3. Carry out operator maintenance	3.1. Travel ***mobile slew conveyor*** to maintenance site and/or ***prepared for maintenance*** 3.2. Carry out routine operator servicing, lubrication and housekeeping tasks 3.3. Carry out minor maintenance 3.4. Clear worksite of tools, debris and defective components and restore to site and ***safety requirements*** 3.5. Carry out recording and reporting
4. Carry out inspection, testing and reporting	4.1. ***Inspect and test structures and components*** for fault conditions, wear and need of repair or replacement 4.2. ***Inspect and test safety devices*** 4.3. Inspect and test fire service systems 4.4. Carry out records and reporting

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct mobile slew conveyor operations:

- apply legislative, organisation and site requirements and procedures for the conduct of mobile slew conveyor operations
- apply permit and access procedures
- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply hand-eye coordination
- use relevant hand tools
- apply diagnostic techniques , including assessing ground conditions
- comply with environmental requirements
- recognise site hand signals

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct mobile slew conveyor operations:

- legislative and regulatory requirements relating to this competency
- site and equipment safety requirements and procedures
- scope and limitations of operations related to this competency
- site conveyor systems and bucketwheel configurations
- relevant mobile slew equipment characteristics, technical capabilities and limitations
- relevant operational and maintenance procedures
- mine site geological and survey data and assessment of ground conditions
- fire suppression, fire alert and disaster plan procedures
- hazard identification and risk assessment response procedures
- site environmental requirements and constraints related to conveyor/bucketwheel system

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting mobile slew conveyor operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of mobile slew conveyor operations • working with others to undertake and complete the mobile slew conveyor operations in a way that meets all of the required outcomes • consistent timely completion of mobile slew conveyor operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of mobile slew conveyor operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Briefings or handover details may include:	• machine defects/faults • nature and scope of task • details of load chart/factors • adequacy of site lighting • potential hazards • status of system/permits
Plan the job includes:	• allocation of duties • plant inspections • minor maintenance
Pre-start checks include:	• rotation test • operational readiness test
Safety requirements may include:	• following access and permit procedures • boarding and disembarking procedures • working behind protective barriers • procedures for clearing blocked chutes and excessive spills • procedures covering moving parts • hot machinery
Site hazards may include:	• power lines • overhead service lines • lighting • obstructions • structures • other equipment/vehicles • dangerous material • formation/earthworks/batters

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	• underground services • water
Mobile slew conveyor may operate:	• to manned or unmanned hopper • from bucketwheel or bucket chain excavators • optimum digging rates • belt sizes and loading capacities may vary • between conveyors
Operations may be:	• conducted in all weather conditions, including extreme conditions by day or night and may include coal or overburden
Safety rules and regulations may be contained in:	• legislation and regulations • relevant Australian standards • management plans • manager's rules • OHS policy • code of practice • manufacturer's manuals and instructions • safe working or job procedures • training resources
Prepared for maintenance may include:	• positioning and set up • electrics isolated • permit issued
Inspect and test structures and components may include checking:	• belts • sensors and indicators • idlers and pulleys • gearboxes • motors • couplings • hydraulics • frames
Inspect and test safety devices may include:	• providing the equipment function and correct lamp activated • lamp indicators tested

Unit Sector(s)

Coal Mining (Open Cut)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCO301A Conduct control centre operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of control centre operations in the coal industry. It includes insert information from elements. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for plant operation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify ***shift requirements*** from the ***previous shift report*** and instructions relating to ***plant operations*** 1.3. Interpret and confirm shift operational plan with the supervisor according to mine procedures 1.4. ***Communicate*** with all relevant personnel before commencement of ***operations*** 1.5. Carry out pre-start check of all equipment
2. Control plant operations	2.1. Start-up equipment and close down completely or partially in the sequence necessary to avoid damage/spillage 2.2. Monitor and control ***plant processes*** to maintain shift plan and optimise coal stocks/***coal quality*** and overburden removal 2.3. Monitor location and availability of all personnel within the mine 2.4. Monitor and act on warning devices 2.5. Control the ***operation*** of equipment and the use of materials to minimise wastage 2.6. Implement emergency, fire and disaster situations, including control centre evacuation procedures
3. Record operational information	3.1. Report and record all ***information*** required to maintain excavation and plant ***operations***, including oral and written reports
4. Maintain standard practices	4.1. Follow standards for safe and competent work practices 4.2. Maintain control systems security requirements 4.3. Control and monitor contractor access to mine and ***plant*** 4.4. Observe safety rules and regulations, including legislation and site-specific instructions

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct control centre operations:

- apply legislative, organisation and site requirements and procedures for the conduct of control centre operations
- apply legislative, organisation and site requirements and procedures for conduct of control centre operations
- apply emergency, disaster, safety and security requirements
- access, interpret and apply technical information to production plans
- maintain records
- apply hand-eye coordination
- apply diagnostic techniques and resolve operational problems
- comply with environmental requirements
- use basic keyboard skills

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct control centre operations:

- legislative and regulatory requirements relating to this competency
- site and equipment permit and access procedures
- state and mine emergency and disaster procedures and safety requirements, , including fire and flood
- site plant and systems configuration, alternative configurations, capacities and limitations
- environmental compliance requirements
- control centre monitoring and communication systems
- personnel/shift systems
- maintenance and contractor procedures
- mine geological conditions and survey data and associated operating precautions

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting control centre operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of control centre operations • working with others to undertake and complete the control centre operations in a way that meets all of the required outcomes • consistent timely completion of control centre operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the control centre operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Information may be transmitted by the following means:	• 2-way radio • telephone • PA • verbal • CB • written • computer monitor • printouts
Operations may be conducted in all weather conditions, including extreme conditions by day or night and may include:	• hot and dusty • heavy rain/flood • fog • high wind
Shift requirements may include:	• operating plant identified • outages and breakdowns • maintaining schedules • digging tonnage requirements • personal requirements • conditions of plant and weather
The previous shift report may include:	• production results , including input and output tonnages and coal quality/blending requirements • breakdown details • availability and location of coal by type, seam, blend • system and plant defects , including faults of plant equipment • maintenance and outage coordination

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	requirements • water availability • charts, printouts, logs, amp readings
Plant may include:	• conveyor transport system • crushers • stackers • raw coal bunkers • bucketwheel/bucket chain excavators • feeders • reclaimers • samplers • pumps and screens • gates • compressors • tramp iron magnets
Processes may involve:	• ash level • moisture content • size • condition of ROM • yield • belt size • plant availability • coal availability • limitations of equipment • bunker capacity • coal blending • reject percentages • sump levels • density control • weather information
Role and responsibilities may include:	• production • outage coordination • emergency commander
Liaisons with other personnel may include:	• fitters • electricians • contractors • plant operators • machinery operators • supervisors • yard persons • laboratory assistant

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	• planners • emergency personnel
Coordination with other sections may include:	• power station operations • fire services • police and emergency services • planning • maintenance
Environmental and ground conditions may include:	• stress relief • cracking • fire holes • aquifers
Faults may be identified by the following:	• alarms • indicator lights • amp gauges • computer monitor • camera monitor • visual inspection
Adjustments may be made directly using automatic or manual controls, or remotely through third parties.	
Factors governing **coal quality** may include:	• coal type • moisture • ash content
Plant identification codes may vary between mine sites.	

Unit Sector(s)

Coal Mining (Open Cut)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCO302A Conduct surface miner operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of surface miner operations in the coal industry. It includes planning and preparing for operations, operating the surface miner, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply geological and survey data required to complete the allocated work
2. Operate surface miner	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up and shutdown procedures 2.3. Conduct, control and monitor mining procedures, milling, loading and manoeuvring 2.4. Select required ***loading method***, drive-by or other appropriate method, and position the equipment and ***haulage units*** to meet this requirement 2.5. Act on monitoring systems and report on alarms 2.6. Recognise and respond to hazardous and emergency situations 2.7. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment
3. Carry out operator maintenance	3.1. Carry out ***surface miner*** inspections and fault-finding 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks 3.3. Carry out minor maintenance 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks 3.5. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct surface miner operations:

- apply legislative, organisation and site requirements and procedures for conducting surface miner operations
- apply legislative, organisation and site requirements and procedures for conducting surface miner operations
- apply operational safety requirements
- access, interpret and apply technical information
- maintain records
- apply hand-eye coordination
- use relevant hand tools
- apply diagnostic techniques
- apply environmental constraints in surface miner operations
- dispose of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct surface miner operations:

- site and equipment safety requirements
- mining systems and site procedures
- miner characteristics, technical capabilities and limitations
- surface miner operational procedures
- basic geological and survey data
- surface miner maintenance systems and procedures
- hazard identification and response procedures
- site environmental requirements and constraints related to surface miner operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting surface miner operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of surface miner operations • working with others to undertake and complete the surface miner operations in a way that meets all of the required outcomes • consistent timely completion of surface miner operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the surface miner operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Surface miners may be:	• diesel electrical • diesel mechanical
Work requirements may include:	• nature and scope of work • working conditions • achievement targets • site lighting arrangements • defects on machine • hazards and potential hazards • coordination requirements/issues
Specific safety requirements are to include:	• boarding and disembarking procedures • lowering of implements • relocating • operational signal procedures
Loading methods may include:	• drive-by • single and double side • windrow stockpiling
Haulage units may include:	• rear dump • belly dumps • road trucks
Surface miner operations are to include mining coal and roadworks and may include:	• material removal • road profiling • boxing out • milling to correct mining depths and horizons • responding to changes in depth

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	• grade and cross fall • loading and manoeuvring
Operator maintenance is:	• those maintenance activities established and authorised for the site

Unit Sector(s)

Coal Mining (Open Cut)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCO303A Conduct auger miner operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of auger miner operations in the coal industry. It includes planning and preparing for operations, operating the auger miner, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify work requirements before proceeding. 1.3. Access, interpret and apply geological and survey data required to complete the allocated work. 1.4. Access and apply safety information and procedures throughout the work
2. Operate auger miner	2.1. Coordinate activities with others at the site prior to commencement of, and during, the work activity. 2.2. Carry out pre-start, start-up, park-up and shutdown procedures in accordance with manufacturer's instructions and site procedures. 2.3. Conduct, control and monitor auger mining procedures 2.4. Select required loading method, drive-by or other appropriate method, and position the equipment and haulage units to meet this requirement. 2.5. Act or report on monitoring systems and alarms 2.6. Recognise and respond to hazardous and emergency situations 2.7. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.
3. Carry out operator maintenance	3.1. Carry out equipment inspections and fault-finding 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks 3.3. Carry out minor maintenance 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks 3.5. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct auger miner operations:

- apply legislative, organisation and site requirements and procedures for conducting auger miner operations
- apply operational safety requirements
- access, interpret and apply technical information
- monitor wall stability
- apply hand-eye coordination
- apply diagnostic techniques
- use relevant hand tools
- maintain equipment records
- apply environmental constraints in auger mining operations
- dispose of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct auger miner operations:

- relevant statutory requirements
- site mining systems and procedures
- site and equipment safety procedures
- auger equipment characteristics, technical capabilities and limitations
- auger mining operational procedures
- auger mining maintenance systems and procedures
- geological and survey data
- hazard identification and response procedures
- site environmental requirements and constraints related to auger mining

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting auger miner operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of auger miner operations • working with others to undertake and complete the auger miner operations in a way that meets all of the required outcomes • consistent timely completion of auger miner operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the auger miner operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice • manufacturer's instructions • safe working procedures (or equivalent)
Specific safety requirements are to include:	• boarding and disembarking procedures • relocation procedures • shift blasting schedules • advance and retraction procedures • operational signal procedures
Auger miners may include:	• diesel • mechanical • electrical • other design
Loading methods may include:	• drive by • stockpile • single side
Haulage Units may include:	• rear dump • belly dump • road trucks

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Shift details may include:	• equipment/plant identification/allocation • nature and scope of the work • working conditions • achievement targets • site lighting arrangements • defects of machine • hazards and potential hazards • coordination requirements/issues
Auger miner procedures may include:	• pad preparation • planning and set up • mining • loading and repositioning
Miner controls are to be used to:	• mine to correct depths and horizons • maintain alignment • respond to changes in seam dip • geological structures
Coordination requirements may include:	• front end loaders • cranes • auger flight handling machines • service vehicles • dozers • other equipment
Operator maintenance tasks are:	• those established and authorised for the site

Unit Sector(s)

Coal Mining (Open Cut)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCP202A Conduct rail dispatch operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of rail dispatch operations in the coal industry. It includes planning for dispatch operations, and loading and dispatching coal. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for dispatch operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and confirm ***dispatch requirements***. 1.3. Inspect and test run rail ***dispatch systems components*** to ensure they are safe and functioning. 1.4. ***Coordinate*** issues with others involved in or affected by the operations. 1.5. Transfer to or confirm as being present the required quantity and quality of coal product in the bulk loader/bin. 1.6. Prepare ***documentation*** and records for the dispatch operation in accordance with site/rail/port authority procedures
2. Load and dispatch coal	2.1. Confirm train identification and identify specific loading requirements and patterns. 2.2. Establish communications with the train operator and supporting plant/equipment operators prior to commencement of loading. 2.3. Access and apply ***safety information and procedures*** throughout the operations. 2.4. Direct train movement and positioning for bulk loader. 2.5. Load train to specification. 2.6. ***Complete and process loading records*** in accordance with site/rail authority requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conducting rail dispatch operations:

- apply legislative, organisation and site requirements and procedures for conducting rail dispatch operations
- apply operational safety requirements
- access, interpret and apply technical information
- apply communication skills (oral and written)
- use communications equipment
- calculate dispatch details
- operate loading systems
- prepare and maintain documentation and records
- comply with site/rail environmental requirements and constraints

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct rail dispatch operations:

- conditions agreed with the rail authority
- site and equipment safety requirements
- coal product quality procedures
- stockpile and dispatch management systems and procedures
- coal dispatch systems components, their characteristics, functions and limitations
- freight rail operational procedures
- freight rail/customer communication systems
- rail dispatch documentation and recording systems
- coal and rail industry environmental requirements and constraints

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting rail dispatch operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of rail dispatch operations • working with others to undertake and complete the rail dispatch operations in a way that meets all of the required outcomes • consistent timely completion of rail dispatch operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the rail dispatch operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Dispatch requirements may include the:	• quantity, quality and stockpile source of coal • train identification • essential timings • coordination requirements/issues
Dispatch systems components for inspection/test run may include:	• conveyors • feeders • hydraulics (loaders) • rail line • signals • samplers • communications equipment
Documentation may include:	• ticketing • report sheets • consignment notes • others agreed with the rail and port/receiving authority
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice • manufacturer's instructions • safe working procedures (or equivalent)
Coordination with others may include:	• servicing rail authority • train operator • discharge port samplers and plant/equipment

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	operators such as dozers and reclaimers
Completion of records may include the:	• placement of tickets on train • recording of load and train details • recording of arrival, loading and departure times

Unit Sector(s)

Coal Mining (Coal Preparation)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCP301A Monitor plant operations for coal preparation

Modification History

Not applicable.

Unit Descriptor

This unit covers the monitoring of coal preparation plant operations in the coal industry. It includes preparing for plant operations, monitoring preparation processes, and supporting coal preparation processes. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant technician role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for plant operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Locate and identify by name, number and/or code and function all appropriate ***process equipment and plant*** 1.3. Carry out pre-start check of all equipment and provide reports to control in accordance with manufacturer and/or site procedures 1.4. Interpret and apply basic mineralogy information required to complete the ***processes*** in accordance with site requirements
2. Monitor preparation plant processes	2.1. Identify the limitations and capabilities of plant processes and report detail to control 2.2. ***Monitor*** plant ***processes*** and pass reports to control 2.3. ***Monitor*** the operation of equipment and the use of materials and pass reports to control 2.4. ***Report and record*** all ***information*** required to maintain ***coal*** preparation plant ***processes*** in accordance with site procedures
3. Support coal preparation processes	3.1. Note the results of continuous inspections and identify and locate all ***faults*** by name, number and/or code and rectify and/or report in accordance with site procedures 3.2. Complete housekeeping duties throughout the worksites 3.3. Carry out operational reporting and complete and process documents in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to monitor coal preparation plant operations:

- apply legislative, organisation and site requirements and procedures for monitoring coal preparation plant operations
- apply operational safety requirements
- access, read, interpret and apply technical information
- identify process equipment and plant
- apply hand-eye coordination
- diagnose faults
- apply preventative control measures
- use relevant hand tools
- prepare and communicate reports
- maintain equipment records
- comply with environmental requirements
- enter basic computer data

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to monitor coal preparation plant operations:

- site and equipment/plant safety requirements
- coal preparation processes
- manual process control techniques
- equipment/plant characteristics, technical capabilities and limitations
- equipment/plant operating procedures
- basic mineralogy related to coal quality
- basic geological and survey data
- relevant chemicals, materials and their environment effects
- Hazchem related to the work area
- site environmental requirements and constraints related to coal plant operations
- recording and reporting procedures
- impact of processes on customer quality requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the monitoring of coal preparation plant operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of coal preparation plant operations monitoring • working with others to undertake and complete the monitoring of coal preparation plant operations in a way that meets all of the required outcomes • consistent timely completion of coal preparation plant operations monitoring that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the monitoring of coal preparation plant operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Types of coal may include:	• seam • calorific value • size • moisture content • percentage ash • sulphur content • coking • steam
Work requirements may include:	• shift briefings • handover details • work orders • consideration of the previous shift report • end product specifications • production results, including tonnages and output tonnages • set points for densities • levels • pressures • breakdown details • availability and location of coal by type • seam • blend • defects, including faults in plant/equipment • maintenance requirement • water availability • charts • print-outs

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	• logs • amp readings • thickener • tailings • roll stocks
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice • manufacturer's instructions • safe working procedures (or equivalent)
Process equipment and plant may include:	• crushers • stackers • feeders • reclaimers • drums • samplers • conveyors • pumps and screens • sieve bends • chutes • launders • gates • compressors • magnetic separators • filters • centrifuge • flotation cells • agitators • elevator • thickeners • blowers • breakers • magnets • belts • feeders • jigs • cyclones
Processes to be controlled may include:	• sampling • crushing

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	• screening • jigging • flotation • magnetite recovery • dense media separation • fines recovery • centrifuging • settling and structuring • effluent treatment
Monitoring may include:	• ash level • moisture content • size • yield • plant availability • product stock pile • bin capacity • reject percentages • sump levels • density control
Recording and reporting may include:	• control room log • computer reports • accident/incident reports • check sheets • pre-shift equipment reports • defect reports • tags • work orders
Shift reports may include:	• plant downages • downtime • maintenance requirements • quality information
Information may be transmitted by:	• 2-way radio • telephone • PA • verbal • CB • written • computer monitor • printouts
Faults may be identified by:	• alarms • indicator lights

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	• amp gauges • computer monitor • camera monitor • visual inspection

Unit Sector(s)

Coal Mining (Coal Preparation)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU201A Operate power tram

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of power trams in the coal mining industry. It includes: planning and preparing for operations, operating power trams, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to the application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental data*** required to complete the allocated work
2. Operate power tram	2.1. Coordinate activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up and shutdown procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Carry out towing procedures to manufacturer's instructions and/or site procedures 2.4. Carry out safe operating practices, including operating controls, monitoring gauges and systems conducting safety checks within manufacturer's instructions and/or site procedures 2.5. Operate equipment within limitations as specified by the manufacturer's instructions and/or site procedures 2.6. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and/or site procedures 2.7. Maintain records in accordance with site agreements 2.8. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the equipment
3. Carry out operator maintenance	3.1. Carry out ***power tram*** inspections and fault-finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor ***maintenance*** to

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	manufacturer's instructions and/or site requirements 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following, as required to operate power trams:

- apply legislative, organisation and site requirements and procedures for operating power trams
- start, operate and shutdown equipment
- use diagnostic techniques
- conduct relevant maintenance requirements
- use hand tools
- conduct emergency shutdowns
- maintain appropriate records
- dispose of environmentally sensitive oils, fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be applied. This includes knowledge of the following, as required to operate power trams:

- operational safety requirements
- power tram equipment characteristics, technical capabilities and limitations
- power tram operational procedures
- location of equipment relative to working environment
- ventilation system and conditions
- power tram maintenance requirements and procedures
- recording, reporting and handover procedures
- site environmental requirements and constraints related to power trams

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating power trams • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of power tram operations • working with others to undertake and complete the power tram operations in a way that meets all of the required outcomes • consistent timely completion of power tram operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the power tram operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • shift briefings including: nature and scope of the work, working conditions, defects of equipment, achievement targets, hazards , potential hazards, coordination requirements/issues • handover details • work orders
Mine environmental data may be in the form of:	• ventilation/gas data • deputy report
Power tram may be:	• rubber tyred • skid mounted • tracked
Power tram may be used with:	• continuous miner/road header • mules • shuttle car • ratio feeders • mobile bootend
Operator (**operational**) **maintenance** procedures are:	• those established and authorised for the site

Unit Sector(s)

Coal Mining (Underground)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU202A Conduct tracked vehicle/plant operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of tracked vehicle/plant operations in the coal mining industry. It includes: planning and preparing for operations, operating equipment and associated attachments, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to the application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceedings 1.3. Access, interpret and apply ***mine environmental data*** required to complete the allocated work
2. Operate equipment and **associated attachments**	2.1. Coordinate activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up, shutdown procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Use vehicle controls and systems to ensure smooth and effective operations 2.4. Operate vehicle within equipment limitations, and gauges and systems are monitored and responded to in accordance with manufacturer's specifications and/or site requirements 2.5. Safely load/unload personnel or materials in accordance with manufacturer's site requirements 2.6. Safely carry out towing and pushing of equipment and plant in accordance with the manufacturer's specifications and/or site requirements 2.7. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and/or site procedures 2.8. Perform work in accordance with the agreed plan and outcomes and within the operating capacities of the equipment
3. Carry out **operator maintenance**	3.1. Carry out ***tracked vehicle***/***plant*** inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in

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	accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and/or site requirements 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following, as required to conduct tracked vehicle/plant operations:

- apply legislative, organisation and site requirements and procedures for conducting tracked vehicle/plant operations
- apply operational safety requirements
- access, interpret and apply technical and environmental information
- start, operate and shutdown equipment
- use diagnostic techniques
- conduct relevant maintenance requirements
- use hand tools
- conduct emergency shutdowns
- maintain appropriate records
- apply environmental constraints and procedures
- dispose of environmentally sensitive oils, fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be applied. This includes knowledge of the following, as required to conduct tracked vehicle/plant operations:

- operational safety requirements
- tracked vehicle/plant equipment characteristics, technical capabilities and limitations
- tracked vehicle/plant operational procedures
- location of equipment relative to working environment
- ventilation system and conditions
- tracked vehicle / plant maintenance requirements and procedures
- recording, reporting and handover procedures
- site environmental requirements and constraints related to tracked vehicle / plants

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting tracked vehicle/plant operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of tracked vehicle/plant operations • working with others to undertake and complete the tracked vehicle/plant operations in a way that meets all of the required outcomes • consistent timely completion of tracked vehicle/plant operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the tracked vehicle operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • management plans • OHS policy • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Specific safety requirements may include:	• personnel safety and control • load security and safety • transport rules • operational signals procedures

Work requirements may be in the form of:	• shift briefings including:
	  • nature and scope of the work
	  • route
	  • working conditions
	  • achievement targets
	  • defects of equipment
	  • hazards and potential hazards
	  • coordination requirements/issues
	• handover details
	• work orders

Mine environmental data may be in the form of:	• ventilation/gas data • deputy reports
Associated attachments may include:	• drill rigs • forks • winches • cranes • jibs • blades

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Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	
Tracked vehicle/**plant** types may be:	• electric drive • mechanical drive • pneumatic drive • hydraulic drive • single or multiple drive
Tracked vehicle/**plant** may include:	• material transport and towing equipment • dozers/mule • drill platforms • breaker-line supports • feeder-breakers • auxiliary fans • mobile bootends

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU203A Conduct wheeled vehicle operations (non-articulated)

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of wheeled vehicle operations (non-articulated) in the coal mining industry. It includes: planning and preparing for operations, operating vehicles, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to the application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental*** geological and survey ***data*** required to complete the allocated work
2. Operate vehicles	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up, shutdown procedures in accordance with manufacturer instructions and/or site procedures 2.3. Use vehicle controls and systems to ensure smooth and effective operations 2.4. Operate vehicle within equipment limitations, and monitor and respond to gauges and systems in accordance with manufacturer's specifications and/or site requirements 2.5. Safely load/unload personnel or materials to be carried and embark/disembark in accordance with manufacturer's instruction and/or site procedures 2.6. Safely carry out towing of equipment and plant in accordance with manufacturer's instructions and/or site requirements 2.7. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and/or site procedures 2.8. Perform work in accordance with the agreed plan and outcomes and within the operating capacities and ***safety requirements*** of the equipment

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3. Carry out **operator maintenance**	3.1. Carry out ***non-articulated wheeled vehicle*** inspections and fault-finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and/or site requirements 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following, as required to conduct wheeled vehicle operations (non-articulated):

- apply legislative, organisation and site requirements and procedures for conducting wheeled vehicle operations (non-articulated)
- apply operational safety requirements
- access, interpret and apply technical and environmental information
- start, operate and shutdown equipment
- use diagnostic techniques
- conduct relevant maintenance requirements
- use hand tools
- conduct emergency shutdowns
- maintain appropriate records
- apply environmental constraints and procedures
- dispose of environmentally sensitive oils, fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct wheeled vehicle operations (non-articulated):

- operational safety requirements
- non-articulated wheeled vehicle equipment characteristics, technical capabilities and limitations
- non-articulated wheeled vehicle operational procedures
- location of equipment relative to working environment
- ventilation system and conditions
- non-articulated wheeled vehicle maintenance requirements and procedures
- recording, reporting and handover procedures
- site environmental requirements and constraints related to non-articulated wheeled vehicles

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting wheeled vehicle operations (non-articulated) • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of wheeled vehicle operations (non-articulated) • working with others to undertake and complete the wheeled vehicle operations (non-articulated) in a way that meets all of the required outcomes • consistent timely completion of wheeled vehicle operations (non-articulated) that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the wheeled vehicle operations (non-articulated)

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • management plans • OHS systems • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Non-articulated wheeled vehicle types may be:	• electric drive • mechanical drive • single or multiple drive
Non-articulated wheeled vehicles may include:	• PJB • PET • Ranger • Toyota • drift runner • man transporters
Non-articulated wheeled vehicle applications may include:	• transportation of personnel or materials, including towing of equipment
Mine environmental data may be in the form of:	• ventilation/gas data • deputy reports • survey data
Work details may include:	• vehicle identification • nature and scope of the work • route • working conditions • achievement targets • defects on equipment • hazards and potential hazards • coordination requirements / issues

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Safety requirements may include:	• passenger safety and control • load security and safety • transport rules • operational signals procedures
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU204A Conduct wheeled vehicle operations (articulated)

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of wheeled vehicle operations (articulated) in the coal mining industry. It includes: planning and preparing for operations, operating vehicles, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to the application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental data*** required to complete the allocated work
2. Operate vehicles	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up, shutdown procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Use vehicle controls and systems to ensure smooth and effective operations 2.4. Operate vehicle within equipment limitations, and monitor and respond to gauges and systems in accordance with manufacturer's specifications and/or site requirements 2.5. ***Safely*** load/unload personnel or materials to be carried and embark/disembark in accordance with manufacturer's instruction and/or site procedures 2.6. ***Safely*** carry out towing and pushing of equipment and plant in accordance with manufacturer's instructions and/or site requirements 2.7. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and/or site procedures 2.8. Perform work in accordance with the agreed plan and outcomes and within the operating capacities and ***safety requirements*** of the equipment
3. Carry out operator maintenance	3.1. Carry out ***articulated wheeled vehicle*** inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in

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	accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and/or site requirements 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following, as required to conduct wheeled vehicle operations (articulated):

- apply legislative, organisation and site requirements and procedures for conducting wheeled vehicle operations (articulated)
- apply operational safety requirements
- access, interpret and apply technical and environmental information
- start, operate and shutdown equipment
- use diagnostic techniques
- conduct relevant maintenance requirements
- use hand tools
- conduct emergency shutdowns
- maintain appropriate records
- apply environmental constraints and procedures
- dispose of environmentally sensitive oils, fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be applied. This includes knowledge of the following, as required to conduct wheeled vehicle operations (articulated):

- operational safety requirements
- articulated wheeled vehicle equipment characteristics, technical capabilities and limitations
- articulated wheeled vehicle operational procedures
- location of equipment relative to working environment
- ventilation system and conditions
- articulated wheeled vehicle maintenance requirements and procedures
- recording, reporting and handover procedures
- site environmental requirements and constraints related to articulated wheeled vehicles

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting wheeled vehicle operations (articulated) • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of wheeled vehicle operations (articulated) • working with others to undertake and complete the wheeled vehicle operations (articulated) that meets all of the required outcomes • consistent timely completion of wheeled vehicle operations (articulated) that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the wheeled vehicle operations (articulated)

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • management plans • OHS systems • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Articulated wheeled vehicle types may be:	• electric drive • mechanical drive • single or multiple drive • hydrostatic
Articulated wheeled vehicles may include:	• load haul dump • MPV • bobcat • roller • ramcar
Articulated wheeled vehicle applications may include transportation of personnel or materials, such as chocks, material trailers, and towing and pushing of other equipment.	
Vehicle attachments may include:	• drill rigs • forks • cable winders • pods • winches • jibs • ballast skips • stone dusters

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	• man baskets • chock trailers • auger • can clamp • rib trimmer
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Mine environmental data may be in the form of:	• ventilation/gas data • deputy reports • survey data
Work details may include:	• vehicle identification • nature and scope of the work • route • working conditions • achievement targets • defects on equipment • hazards and potential hazards • coordination requirements / issues
Work details may include:	• vehicle identification • nature and scope of the work • route • working conditions • achievement targets • defects on equipment • hazards and potential hazards • coordination requirements / issues
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMCU205A Conduct rotational drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of rotational drilling in the coal industry. It includes: planning and preparing for operations, operating drilling equipment, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** in the form of shift briefings, handover details or work orders before proceeding 1.3. Access, interpret and apply ***mine environmental geological and survey data*** required to complete the allocated work in accordance with site procedures 1.4. Obtain, transport and prepare materials and resources required for the work in accordance with manufacturer and/or ***site requirements*** and legislative requirements 1.5. Prepare worksite and equipment in accordance with ***site requirements***
2. Operate drilling equipment	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up and shutdown procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Operate ***drilling*** equipment in accordance with manufacturer's instructions and/or site specific instructions to carry out the function of ***rotary drilling*** 2.4. Record and report findings and anomalies in accordance with site specific requirements 2.5. Recognise and respond to emergency and ***hazardous situations*** in accordance with manufacturer's instructions and/or site procedures
3. Carry out **operator maintenance**	3.1. Carry out ***drilling*** equipment inspections and fault finding in accordance with manufacturer's instructions and/or ***site requirements*** 3.2. Carry out ***drilling*** equipment inspections and fault finding in accordance with manufacturer's instructions and/or ***site***

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	requirements 3.3. Carry out minor maintenance to manufacturer's instructions and/or ***site requirements*** 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with ***site requirements*** 3.5. Process ***records*** in accordance with ***site requirements***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct rotational drilling:

- apply legislative, organisation and site requirements and procedures for the conduct of rotational drilling
- apply operational safety requirements
- read, interpret and apply technical information
- isolate and tag
- install, maintain and recover drilling equipment
- apply geological and survey data
- identify hazards and potential hazards
- read gas detection equipment
- apply emergency procedures
- identify defects and damage
- maintain records and reports
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct rotational drilling:

- site operational safety procedures
- site drilling operations
- drilling equipment characteristics and limitations
- isolation and tagging procedures
- mine gases
- outburst phenomena
- ventilation principles
- geological and survey data
- down hole survey and logging
- visual inspection procedures
- site drilling equipment maintenance systems and procedures
- recording and reporting
- site environmental requirements and constraints related to drilling

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting rotational drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of rotational drilling operations • working with others to undertake and complete the rotational drilling in a way that meets all of the required outcomes • consistent timely completion of rotational drilling operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the rotational drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Nature and scope of work includes:	• sequencing of operations • achievement targets • locations and essential survey information • working conditions • geological conditions • hazard • potential hazards • coordination requirements/issues
Mine environmental, **geological and survey data** may be in the form of:	• ventilation/gas data • deputy reports • geological hazard plan • longitudinal and cross sectional survey plans
Site requirements may include:	• SOPs • work instructions
Drilling may be for:	• geological exploration • old workings • water • gas
Rotary drilling may include:	• collaring • reaming

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	• drilling • coring • core recovery • rod retrieval • standpiping • connecting hose to suction • monitoring suction
Drill power types may be:	• electric • air • hydraulic
Hazardous situations may include:	• pollution of work station by release of seam gas • rotating parts • ejection of material from hole • inrush • rod ejection
Records may include:	• logs • work completed • equipment defects and requirements
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU206A Install, maintain and recover gas drainage systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation, maintenance and recovery of gas drainage systems in the coal mining industry. It includes: planning and preparing for operations, installing and recovering services, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to the application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, transport and prepare ***materials*** and resources required for the work in accordance with the plan and relevant manufacturer and/or site requirements.
2. Install and recover services	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity. 2.2. Establish and monitor safe work environment throughout the job. 2.3. Install services in accordance with site specific installation instructions and practices. 2.4. Identify and mark services in accordance with site hazards. 2.5. Inspect and test installation to ensure functionality, safety and compliance with specifications. 2.6. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and/or site procedures. 2.7. Recover services systematically, in accordance with authorised mine procedures and with minimal loss and damage to the recovered equipment and the site.
3. Carry out **operator maintenance**	3.1. Inspect and maintain services in accordance with legislative requirements and site procedures. 3.2. Process reports on ***gas*** drainage maintenance requirements in accordance with legislative requirements and site procedures.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following, as required to install, maintain and recover gas drainage systems:

- apply legislative, organisation and site requirements and procedures for installing, maintaining and recovering gas drainage systems
- apply operational safety requirements
- read, interpret and apply technical information
- install, maintain and recover equipment
- identify potential hazards
- apply equipment/manual handling techniques
- identify defects
- isolate, tag and drain
- use relevant hand tools
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be applied. This includes knowledge of the following, as required to install, maintain and recover gas drainage systems:

- site operational safety procedures
- legislative and environmental requirements related to gas drainage
- site operational procedures
- gas characteristics
- gas related safety requirements and emergency procedures
- gas drainage installation, recovery and maintenance techniques
- gas drainage equipment characteristics, technical capabilities and limitations
- gas drainage operational and maintenance procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing, maintaining and recovering gas drainage systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the installation, maintenance and recovery of gas drainage systems • working with others to undertake and complete the installation, maintenance and recovery of gas drainage systems in a way that meets all of the required outcomes • consistent timely completion of the installation, maintenance and recovery of gas drainage systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation, maintenance and recovery of gas drainage systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • shift briefings • handover details, and/or • management plan • OHS policy • code of practice • work orders
Work requirements may include:	• nature and scope of job • hazards and work environment • related work activities • sequencing of work
Materials required may include:	• bolted pipes • victaulic pipes • AS clamps • earthing equipment • hand tools • clearance indicators • material handling machinery • indicator and warning signals • hanging and support materials • water / coal fines separator • FRAS hose • valves and outlets • flame arrestor • breathing apparatus
Operator (**operational**) **maintenance** procedures are those	

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established and authorised for the site.	
Gas to be drained may include:	• methane • carbon dioxide • other seam gases
Method of drainage may be:	• vacuum • free flow
Specific safety requirements are to include:	• observance of safety tagging procedures • isolation

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU207A Install, maintain and recover electrical services

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation, maintenance and recovery of electrical services in the coal mining industry. It includes: planning and preparing for operations, installing and recovering electrical services, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, transport and prepare materials and resources required for the work in accordance with the plan and relevant manufacturer and/or site requirements
2. Install and recover **electrical services**	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Install services in accordance with site specific installation instructions and practices 2.3. Inspect and check installation to ensure functionality, ***safety*** and compliance with specifications 2.4. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and/or site procedures 2.5. Recover services systematically, in accordance with authorised mine procedures and with minimal loss and damage to the recovered equipment and the site 2.6. Complete site restoration and housekeeping in accordance with site procedures/practices
3. Carry out **operator maintenance**	3.1. Inspect and maintain services in accordance with mine site and legislative requirements 3.2. Process reports on ***electrical services*** maintenance requirements in accordance with site procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install, maintain and recover electrical services:

- apply legislative, organisation and site requirements and procedures for installing, maintaining and recovering electrical services
- apply operational safety requirements
- access, read, interpret and apply technical information
- isolate and tag
- identify hazards/potential hazards
- apply equipment/manual handling techniques
- use hand tools
- install, maintain and recover electrical componentry
- identify defects and damage
- observe signalling procedures
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install, maintain and recover electrical services:

- legislative electrical safety requirements
- operational safety requirements
- site operational procedures
- electrical services componentry its characteristics and uses
- electrical services installation and recovery procedures
- electrical services maintenance procedures
- isolation and tag out procedures
- site environmental requirements and constraints related to electrical services

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing, maintaining and recovering electrical services • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the installation, maintenance and recovery of electrical services • working with others to undertake and complete the installation, maintenance and recovery of electrical services in a way that meets all of the required outcomes • consistent timely completion of the installation, maintenance and recovery of electrical services that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation, maintenance and recovery of electrical services

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • management plans • OHS policy • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • shift briefings • handover details, and/or • work orders
Work requirement details may include:	• nature and scope of the work • equipment and plant, including any defects • achievement targets • routes/plans • sequencing • working conditions • hazards • potential hazards • coordination requirements/issues
Electrical services maintenance and recovery covered by this unit **does not include** working with live power or any other allied function for which the individual is not specifically authorised.	
Electrical services and materials may include:	• transformer • distribution boxes • motors • starters • lighting

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	• communication devices • HT cables • feeder cables • supply cables • communication devices • cable joiners • cable ties
Safety requirements may include observance of:	• safety tagging procedures • electrical isolation requirements • operational signal procedures • marking/identification
Equipment/plant required to support the operation may include:	• cable reelers (machine mounted, skid mounted, air or hydraulic powered) • cable baskets (machine mounted, skid mounted) • vehicles (load haul dump and multi-purposes)
Support materials may include:	• fences • barriers • guards • fire extinguishers • signs • notices • tools
Operator (**operational**) **maintenance procedures** are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU208A Conduct basic strata control operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting basic strata operations in the coal mining industry. It includes: planning and preparing for work, installing and securing support, and carrying out operator maintenance on equipment. Licensing, legislative, regulatory and certification requirements vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental***, ***geological and survey data*** required to complete the allocated work 1.3. Determine, obtain and transport ***resources required for the work*** to the worksite
2. Install and secure support	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out ***equipment***, materials and services check in accordance with the work plan, site and legislative requirements 2.3. Carry out pre-start, start-up, park-up and shutdown procedures on ***equipment***/plant in accordance with manufacturer's instructions and/or site procedures 2.4. Scale down roof and ribs prior to commencing operation 2.5. Drill holes for rib/roof ***bolt*** installation in accordance with manufacturer's and/or site requirements 2.6. ***Install support*** and secure in accordance with manufacturer and/or site and legislative requirements 2.7. Identify/monitor and respond to changing geological conditions in accordance with site procedures 2.8. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and/or site procedures
3. Carry out operator maintenance on equipment	3.1. Carry out ***equipment*** inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and/or site

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	requirements 3.4. Provide operator support during preparation for, and conduct of, maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct basic strata operations:

- apply legislative, organisation and site requirements and procedures for basic strata operations
- apply operational safety requirements
- access, interpret and apply technical information
- read and interpret mine plans
- identify basic support equipment and materials
- communicate orally
- coordinate team work
- identify hazards
- operate basic support equipment
- install supports
- use relevant hand tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct basic strata operations:

- statutory requirements for support
- site personnel and equipment safety requirements
- support procedures/plan
- types, uses and limitations of basic strata control systems
- strata control equipment characteristics, technical capabilities and limitations
- support installation procedures
- site ventilation procedures
- strata hazard identification techniques
- basic geological and survey data
- site environmental requirements and constraints related to basic support operations
- Hazchem related to basic support operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting basic strata operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of basic strata operations • working with others to undertake and complete the basic strata operations in a way that meets all of the required outcomes • consistent timely completion of basic strata operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the basic strata operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • management plans • OHS policy • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Mine environmental, **geological and survey data** may be in the form of:	• ventilation/gas data • deputy reports • geological hazard plan • longitudinal and cross sectional survey plans
Resources required for the work may include:	• support materials • equipment/plant • power and water • personnel
Equipment may include:	• pneumatic, hydraulic and electric drill/bolting rigs • hand held • machine mounted • miner mounted
Bolts may be anchored chemically or mechanically and may be:	• point anchor • fully encapsulated • split wedge • shell • dowel • wood • synthetic

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	• steel, fibre or other material
Install support is to include:	• setting of props • drilling of holes and installing roof/rib bolts
Supports used in basic strata control may include:	• roof/rib bolts • mesh/straps/timber • props (timber hydraulic and manual)
Work instructions may include:	• nature and scope of task • next support sequence • achievement targets • survey data • geological conditions • environmental conditions • defects on equipment/plant • hazards • potential hazards • coordination requirements/issues
Hazards and potential hazards may include:	• personal injuries • gas accumulation • roof, rib and floor conditions • falls • chemical hazards • compressed air • hydraulic pressure • dust • heat
Operator (**operational**) **maintenance** procedures are:	• those established and authorised for the site

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMCU209A Conduct roadway maintenance

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting roadway maintenance in the coal mining industry. It includes: planning and preparing for maintenance, conducting roadway maintenance, finalising work procedures, and carrying out operator maintenance on equipment. Licensing, legislative, regulatory and certification requirements vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental data*** required to complete the allocated work 1.3. Coordinate and transport ***resources*** required for the work to the worksite
2. Conduct roadway maintenance	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out ***equipment***, ***materials*** and services checks in accordance with the ***work requirements*** and site procedures 2.3. Erect/post warning signals and signs prior to commencement of task in accordance with site procedures 2.4. Apply ballast to roadways in accordance with site requirements 2.5. Carry out roadway dust suppression in accordance with site procedures 2.6. Divert and drain roof and floor water in accordance with site procedures 2.7. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and/or site procedures
3. Finalise work procedures	3.1. Perform work in accordance with the ***work requirements*** and targets and within the operating capabilities of the ***equipment*** 3.2. Isolate services in accordance with site procedures 3.3. Complete job/task reports in accordance with site requirements and hand over details
4. Carry out **operator maintenance** on equipment	4.1. Carry out ***equipment*** inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 4.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices

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	4.3. Carry out minor maintenance to manufacturer's instructions and site requirements 4.4. Process records in accordance with site requirements

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following, as required to conduct roadway maintenance:

- apply legislative, organisation and site requirements and procedures for roadway maintenance
- apply personnel and operational safety requirements
- access, interpret, apply and communicate technical information
- use and maintain the roadway maintenance equipment
- identify, select and apply roadway maintenance materials
- perform the maintenance tasks required at the site
- use hand tools
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be applied. This includes knowledge of the following, as required to conduct roadway maintenance:

- mine personnel and operational safety procedure
- mine operational procedures, layout and plan
- road maintenance equipment capabilities, limitations and maintenance requirement
- roadway maintenance materials and their application
- roadway maintenance techniques
- mine geological conditions
- mine environmental requirements and constraints related to roadway maintenance

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting roadway maintenance • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of roadway maintenance • working with others to undertake and complete the roadway maintenance in a way that meets all of the required outcomes • consistent timely completion of roadway maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the roadway maintenance

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • management plans • OHS policy • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirement details may include:	• nature and scope of the work • achievement targets • equipment allocation, including any defects • locations of work • essential survey data • locations of service facilities • site working conditions • environmental conditions • hazards and potential hazards • next area of work and coordination requirements/issues
Mine environmental data may be in the form of:	• ventilation/gas data • deputy reports • geological hazard plan • survey data
Resources required for the work may include:	• personnel • machinery • materials • power • water

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Equipment may include:	• pumps • pumping equipment • signs • barriers • tools
Material may include:	• ballast • concrete (readymix and quickset) • timber • salt • flyash
Maintenance of roadways may include:	• grading • contouring • dust suppression • ballasting holes • cutting drains
Machinery may include:	• grader • load haul dump and attachments • ram car • roller • bobcat
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU210A Conduct stonedusting operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting stonedusting operations in the coal mining industry. It includes: planning and preparing for stonedusting, applying stonedust, finalising work procedures, and carrying out operator maintenance on equipment. Licensing, legislative, regulatory and certification requirements vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for stonedusting	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental data*** required to complete the allocated work 1.3. Coordinate and transport ***resources*** to the worksite 1.4. Identify, select and check ***equipment***, materials and services in accordance with the work requirement and site procedures and legislative requirements
2. Apply stonedust	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out start-up, shutdown and isolation procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Operate ***equipment*** in accordance with manufacturer and/or site requirements 2.4. Apply dust in accordance with statutory and site requirements 2.5. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and/or site procedures
3. Finalise work procedures	3.1. Perform work in accordance with the agreed requirements and achievement targets and within the operating capabilities of the ***equipment*** 3.2. Restore worksite in accordance with site procedures/practices 3.3. Complete job/task reports in accordance with site requirements and hand over details
4. Carry out **operator maintenance** on equipment	4.1. Carry out stonedusting ***equipment*** inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 4.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions

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	and/or site procedures and practices 4.3. Carry out minor maintenance to manufacturer's instructions and/or site requirements 4.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site requirement 4.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct stonedusting operations

- apply legislative, organisation and site requirements and procedures for stonedusting operations
- apply personnel and operational safety requirements
- access, interpret, apply and communicate technical information
- operate stonedusting equipment
- maintain stonedusting equipment
- identify and respond to changing environmental and ventilation conditions
- use hand tools
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct stonedusting operations:

- mine personnel and operational safety procedures
- mine operational procedures, layout and plan
- stonedusting requirements and techniques
- stonedusting equipment capabilities, limitations and maintenance requirements
- stonedusting equipment maintenance procedures
- mine ventilation
- mine environmental requirements and constraints related to stonedusting

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting stonedusting operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of stonedusting operations • working with others to undertake and complete the stonedusting operations in a way that meets all of the required outcomes • consistent timely completion of stonedusting operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the stonedusting operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • management plans • OHS policy • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirement details may include:	• nature and scope of the work • achievement targets • equipment allocation, including any defects • locations of work and essential survey data • locations of service facilities • site working conditions • environmental conditions • hazards • potential hazards • next area of work • coordination requirements/issues
Mine environmental data may be in the form of:	• ventilation/gas data • deputy reports
Resources required for the work may include:	• personnel • machinery • stonedusting materials • compressed air
Equipment may include:	• cantons • pods • quick duster

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	• trickle duster • venturi • machinery including: • load haul dump • multipurpose vehicle • ram cars
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU211A Install and maintain explosion barriers

Modification History

Not applicable.

Unit Descriptor

This unit covers installing and maintaining explosion barriers in the coal mining industry. It includes: planning and preparing, and installing and maintaining explosion barriers. Licensing, legislative, regulatory and certification requirements vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental data*** required to complete the allocated work 1.3. Obtain and prepare materials and resources required for work in accordance with the ***work requirements*** and site procedures
2. Install and maintain **explosion barriers**	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Prepare worksite in accordance with site procedures to ensure a safe working environment 2.3. Install barriers in accordance with relevant manufacturer's specifications and/or site specific installation procedures and practices 2.4. Fill and maintain barriers in accordance with manufacturer's instructions and/or site procedures and practices 2.5. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and/or site procedures 2.6. Carry out inspections in accordance with site and/or legislative requirement

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install and maintain explosions barriers:

- apply legislative, organisation and site requirements and procedures for installing and maintaining explosion barriers
- apply personal and operational safety requirements
- access, interpret, apply and communicate technical information
- apply construction techniques
- perform barrier maintenance
- use hand tools
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install and maintain explosion barriers:

- operational safety requirements
- mine operational procedures and mine layout
- types and applications of barriers
- barrier construction processes and techniques
- barrier maintenance procedures
- mine environmental requirements and constraints related to barrier construction

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing and maintaining explosion barriers • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the installation and maintenance of explosion barriers • working with others to undertake and complete the installation and maintenance of explosion barriers in a way that meets all of the required outcomes • consistent timely completion of the installation and maintenance of explosion barriers that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation and maintenance of explosion barriers

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • management plans • OHS policy • code of practice
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirement details may include:	• the types and specification of barriers • locations • essential survey data • achievement targets • site conditions • equipment/plant allocation, including any defects • hazards • potential hazards • coordination requirements/issues
Mine environmental data may be in the form of:	• ventilation/gas data • deputy reports • geological data • survey data
Explosion barriers may include:	• stone dust • water
Machinery may include:	• load haul dump • multipurpose vehicles • trailer • sled

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Equipment may include:	• chains • eye bolts • hand tools • jacks • bolter drills and bits • level • tubs and frames • props • trays and purlins • bolts

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU212A Construct and maintain basic ventilation devices

Modification History

Not applicable.

Unit Descriptor

This unit covers the constructing and maintenance of basic ventilation devices in coal mining industries. It includes: planning and preparing for operations, constructing basic ventilation devices, and maintaining basic ventilation devices. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental data*** required to complete the allocated work 1.3. Obtain, transport and prepare ***materials*** and resources required for the work in accordance with the plan, site requirements and Hazchem procedures
2. Construct basic ventilation devices	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Prepare worksite in accordance with site procedures to ensure a safe working environment 2.3. Construct ventilation ***device*** in accordance with manufacturer and/or site specific requirements 2.4. Recognise and respond to ***hazardous*** and emergency situations in accordance with manufacturer's instructions and/or site procedures 2.5. Perform work in accordance with agreed plan and outcomes
3. Maintain basic ventilation devices	3.1. Carry out inspections in accordance with legislative and/or site requirements 3.2. Obtain, transport and prepare necessary replacement ***materials***/***equipment*** required for the work in accordance with work practices 3.3. Carry out maintenance work in accordance with legislative and/or site requirements 3.4. Maintain records/reports in accordance with site practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct and maintain basic ventilation devices:

- apply legislative, organisation and site requirements and procedures for constructing and maintaining basic ventilation devices
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- use hand and power tools
- apply construction techniques
- inspect and maintain devices, equipment and materials
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to construct and maintain basic ventilation devices:

- operational safety systems related to ventilation devices
- basic statutory and site ventilation requirements
- mine operational procedures
- basic mine geology and survey information related to ventilation devices
- types and applications of ventilation and sealing systems
- ventilation device construction processes and techniques
- ventilation device equipment and material characteristics including transportation requirements
- site environmental requirements and constraints related to ventilation devices
- identify and determine response to changing environmental conditions (including spontaneous combustion)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for constructing and maintaining basic ventilation devices • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the construction and maintenance of basic ventilation devices • working with others to undertake and complete the construction and maintenance of basic ventilation devices in a way that meets all of the required outcomes • consistent timely completion of the construction and maintenance of basic ventilation devices that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction and maintenance of basic ventilation devices

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management system and plans • OHS policy • code of practice • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirement details may include:	• nature and scope of the construction/maintenance tasks • achievement targets • locations of work • essential survey data • environmental conditions • worksite conditions • support equipment/plant, including any defects • coordination requirements/issues
Mine environmental data may be in the form of:	• ventilation/gas data • deputy reports • geological data • survey data • spontaneous combustion management plan
Materials for devices under this unit may include:	• brattice • plasterboard • hessian • canvas • plaster

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	• snap jacks • pogo sticks • props • battens • nails
Types of devices may include:	• stoppings • seals • regulators
Hazards related to goaf atmospheres may include:	• irrespirable atmospheres • noxious atmospheres • flammable • explosive mixtures
Materials/equipment may include:	• grout pumps • cement mixer • compressed air drill • borer • hoses • hand tools • scaffolding • level • water traps • sampling lines • pressure gauges • gas drainage line • shut off valves • oxygen breathing apparatus • gas detection equipment

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU213A Conduct feeder breaker operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of feeder breaker operations in the mining industry. It includes: planning and preparing for operations, operating feeder breaker, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Access, interpret and apply ***mine environmental data*** required to complete the allocated work in accordance with site procedures 1.4. Access and apply safety information and procedures throughout the work
2. Operate feeder breaker	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, shutdown and isolation procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Receive and confirm route and location plan, if necessary, by site inspection 2.4. Complete roadway preparation and cable routes prior to relocation 2.5. Carry out cable location and management according to site procedures 2.6. Tow the ***feeder breaker*** or move into location and install in accordance with manufacturer's instructions and/or site procedures 2.7. Recognise and respond to ***hazardous*** and emergency situations in accordance with manufacturer's instructions and/or site procedures
3. Carry out **operator maintenance**	3.1. Carry out ***feeder breaker*** inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and/or site

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	requirements 3.4. Provide operator support during preparation for, and conduct of, maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct feeder breaker operations:

- apply legislative, organisation and site requirements and procedures for feeder breaker operations
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply hand-eye coordination
- apply diagnostic and fault finding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements
- apply cable care and safety

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct feeder breaker operations:

- site operational safety procedures
- feeder breaker characteristics, technical capabilities and limitations
- feeder breaker operational procedures
- mine geology and survey data
- feeder breaker maintenance requirements and procedures
- site environmental requirements and constraints relevant to feeder breakers
- applying cable care and safety

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting feeder breaker operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of feeder breaker operations • working with others to undertake and complete the feeder breaker operations in a way that meets all of the required outcomes • consistent timely completion of feeder breaker operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the feeder breaker operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • management plans • OHS policy
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirement details may include:	• equipment and plant, including any defects • cutting sequence • achievement targets • essential survey data • geological conditions • essential environmental information • hazards • potential hazards • coordination requirements/issues
Mine environmental data may be in the form of:	• ventilation/gas data • deputy reports • geological data • survey data
Feeder breaker operations may include:	• sequencing of operations to set tramming arrangements • relocating • aligning and levelling relative to the belt • reconnecting of services
Breakers may be remotely controlled and may be:	• free wheel • skid • track driven

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	• specific side loader • mobile boot ends
Environmental hazards and potential hazards may include:	• roof • rib • floor • falls
Operator (**operational**) **maintenance** procedures:	• are those established and authorised for the site

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU214A Conduct face ventilation operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of face ventilation operations in the coal industry. It includes planning and preparing for operations, ventilating the face, and maintaining face ventilation. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive and clarify face ventilation requirement details in the form of ***work requirements*** before proceeding 1.3. Access, interpret and apply ***mine environmental data*** required to complete the allocated work in accordance with site procedures 1.4. Obtain, transport and prepare materials and resources required for the work in accordance with the plan, site requirements and Hazchem procedures
2. Ventilate the face	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Prepare worksite in accordance with site procedures to ensure a safe working environment 2.3. Install and extend ***brattice***/vent tubes according to site procedures 2.4. Erect temporary stoppings in accordance with sequence plan and site requirements 2.5. Recognise and respond to ***hazardous*** and emergency situations in accordance with manufacturer's instructions and/or site procedures 2.6. Report ***ventilation*** status in accordance with site requirements
3. Maintain face ventilation	3.1. Carry out routine inspections in accordance with site requirements 3.2. Obtain, transport and prepare necessary replacement materials/equipment required for the work in accordance with the plan and relevant site requirements 3.3. Carry out minor maintenance to manufacturer's instructions and/or site requirements 3.4. Maintain records in accordance with site requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct face ventilation operations:

- apply legislative, organisation and site requirements and procedures for face ventilation operations
- apply operational safety requirements
- monitor and identify gas content
- identify hazards
- install and extend ventilation equipment
- read and interpret ventilation plans
- isolate and tag

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct face ventilation operations:

- site personal and operational safety procedures
- site ventilation procedures and methods
- gas characteristics
- causes and effects of static electricity
- ventilation line installation and extension procedures
- auxiliary ventilation rules
- sequence plan
- isolation and tagging procedures
- degassing procedures
- reporting procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for face ventilation operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of face ventilation operations • working with others to undertake and complete the face ventilation operations in a way that meets all of the required outcomes • consistent timely completion of face ventilation operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the face ventilation operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • OHS policy • code of practice • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Mine environmental data may be in the form of:	• ventilation/gas data • deputy reports • geological data • survey data
Brattice methods may include:	• wide side • narrow side • hurdles • wings • screens/stoppings
Work Requirement details may include:	• equipment and plant, including any defects • cutting sequence • achievement targets • essential survey data • geological conditions • essential environmental information • hazards • potential hazards • coordination requirements / issues
Types of ventilation methods may include:	• auxiliary fan (forcing and extracting) • venturi blower • stoppings

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	• brattice line
Defects of equipment may include:	• broken earth wire • damaged ventilation tubes • torn brattice • broken ventilation tube rubbers • fan malfunction
Potential hazards may include:	• gas • dust • static electricity • condition of roof, floor and rib • water accumulation • recirculation of ventilating air
Environmental monitoring may be for dust and gas.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU215A Operate longwall ancillary equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of longwall ancillary equipment in the coal industry. It includes: planning and preparing for operations, operating longwall ancillary equipment, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** and details before proceeding 1.3. Access, interpret and apply ***mine environmental***, ***geological and survey data*** required to complete the allocated work in accordance with site procedures
2. Operate longwall ancillary operations	2.1. Resolve ***coordination activities*** with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up and shutdown procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Carry out ***longwall ancillary equipment operations*** in accordance with manufacturer's instructions and/or site specific procedures 2.4. Recognise and respond to ***hazardous*** and ***emergency situations*** in accordance with manufacturer's instructions and/or site procedures 2.5. Act upon or report factors adversely affecting production, and monitoring systems alarms in accordance with site procedures
3. Carry out operator maintenance	3.1. Carry out ***longwall ancillary equipment*** inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor ***maintenance*** to manufacturer's instructions and/or site requirements 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site

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	requirements 3.5. Process records in accordance with site requirements

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate longwall ancillary equipment:

- apply legislative, organisation and site requirements and procedures for longwall ancillary equipment operations
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply diagnostic and fault finding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate longwall ancillary equipment:

- site operational safety procedures
- longwall operational processes and procedures
- longwall ancillary equipment operational procedures
- longwall ancillary equipment and associated equipment characteristics and limitations
- mine geology and survey information
- mine ventilation systems
- longwall ancillary equipment maintenance systems and procedures
- site environmental requirements and constraints relevant to longwall ancillary equipment operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating longwall ancillary equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of longwall ancillary equipment operations • working with others to undertake and complete the longwall ancillary equipment operations in a way that meets all of the required outcomes • consistent timely completion of longwall ancillary equipment operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the longwall ancillary equipment operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • OHS systems • management plans • code of practice • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work details may include:	• equipment, including defects • roof height • next cutting sequence • achievement targets • essential survey data • geological conditions • defects on equipment • hazards and potential hazards • coordination requirements/issues
Mine environmental, **geological and survey Data** may be in the form of:	• ventilation/gas data • deputy reports • geological hazard plan • longitudinal and cross sectional survey plans
Emergency situations may include:	• state of ventilation • roof and rib fall • fire • flood • flash/ignition • emergency stop procedures • explosion

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	• outbursts
Longwall ancillary equipment operations may include:	• belt retractions • services retractions (air, water, power) • pulling longwall ancillary equipment • servicing chock pumps and tanks • roof and rib support • communication between longwall and outbye • advancing stage loader
Longwall ancillary equipment may include:	• tracker drive (monorail) pulling station • conveyor belt • boot end and cables • stage loader/crusher
Hazards/potential hazards may include:	• high pressure hoses • state of ventilation and atmosphere • windblast • roof and rib
Coordination requirements include those with chock operator and AFC operator.	
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU216A Maintain lamp cabin operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the maintenance of lamp cabin operations in the coal industry. It includes: planning and preparing for operations, and operating and maintaining the lamp cabin. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 1.3. Obtain and prepare ***materials and resources*** required for work in accordance with the ***work requirements*** and relevant manufacturer and/or site requirements
2. Operate and maintain lamp cabin	2.1. Maintain safety and ***personal equipment*** in accordance with site requirements and safe working practices 2.2. Maintain ***records***/***list*** /***logs*** in accordance with site requirements 2.3. Lamp cabin equipment is monitored and faults are identified and responded to in accordance with site requirements 2.4. Perform work according to target outcomes 2.5. Dispose of hazardous and ***environmentally sensitive waste products*** in accordance with site procedures. 2.6. Complete general maintenance and ***housekeeping*** to maintain the lamp cabin in an operational condition

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to maintain lamp cabin operations:

- apply legislative, organisation and site requirements and procedures for maintaining lamp cabin operations
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- plan maintenance and servicing schedules
- dispose of environmentally sensitive materials
- communicate and negotiate with contractors / suppliers and mine employees
- maintain records
- maintain and perform repairs on equipment
- use relevant hand tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to maintain lamp cabin operations:

- site personal and operational safety procedures
- mine operating procedures
- lamp cabin equipment characteristics, uses and limitations
- manufacturer and site equipment maintenance systems
- site chemical substances information system
- stock control procedures related to the lamp cabin operations
- relevant legislative and enterprise records systems
- site environmental requirements and constraints related to the lamp cabin

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for maintaining lamp cabin operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of lamp cabin operations maintenance • working with others to undertake and complete the lamp cabins operations maintenance in a way that meets all of the required outcomes • consistent timely completion of lamp cabin operations maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues, • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the lamp cabin operations maintenance

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details, and/or • work orders
Work requirement details may include:	• servicing and maintenance schedules • notices of changes to shift personnel requirements • notice of visitors requiring equipment • defect reports on equipment and coordination
Materials and resources may include:	• cap lamp spares • personal safety equipment • locked oil flame safety lamp • shotfiring apparatus
Records/lists/logs are those prescribed under the relevant legislation and site procedures.	
Hazardous and environmentally sensitive waste products may include:	• test gases • shellite • battery acid • chemical solvents
Housekeeping may include:	• area clean-up • clearing of walkways • hosing down • securing of equipment and materials • disposing of waste products

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Scheduled servicing andmaintenance requirements are those contained in site procedures or similar authorisations.	
Personal equipment may include:	• cap lamps • self rescuers • hand held instruments
Maintenance procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU301A Conduct specialised strata control operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting specialised strata control operations in coal mining industries. It includes planning and preparing for work, installing and securing supports, and carrying out operator maintenance on equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental***, ***geological and survey data*** required to complete the allocated work 1.3. Determine, obtain and transport ***resources required*** for the work to the worksite
2. Install and secure **supports**	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out equipment, materials and services check in accordance with the work plan, site and legislative requirements 2.3. Pre-start, start-up, park-up and shutdown procedures on equipment/plant in accordance with manufacturer's instructions and/or site procedures 2.4. Scale down roof and ribs prior to commencing operation 2.5. Drill holes for rib/roof bolt installation in accordance with manufacturer and/or site requirements 2.6. install and secure support in accordance with manufacturer and/or site and legislative requirements 2.7. Identify/monitor and respond to changing geological conditions in accordance with site procedures 2.8. Recognise hazardous and emergency situations in accordance with manufacturer's instructions and/or site procedures
3. Carry out operator maintenance on equipment	3.1. Carry out equipment inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and/or site

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	requirements 3.4. Provide operator support during preparation for, and conduct of, maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct specialised strata control operations:

- apply legislative, organisation and site requirements and procedures for specialised strata control operations
- apply operational safety requirements
- access, interpret and apply technical information
- read and interpret mine plans
- identify specialised support equipment and materials
- communicate orally
- coordinate team work
- identify hazards
- operate specialised support equipment
- install specialised supports
- use relevant hand tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct specialised strata control operations:

- statutory requirements for support
- site personnel and equipment safety requirements
- manager's support rules/plan
- types, uses and limitations of specialised strata control systems
- equipment characteristics, technical capabilities and limitations
- support installation procedures
- site ventilation procedures
- strata hazard identification techniques
- geological and survey data
- site environmental requirements and constraints related to specialised support operations
- Hazchem related to support operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting specialised strata control operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of specialised strata control operations • working with others to undertake and complete the specialised strata control operations in a way that meets all of the required outcomes • consistent timely completion of specialised strata control operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the specialised strata control operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • management plans • OHS policy
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work instructions may include:	• nature and scope of task • next support sequence • achievement targets • survey data • geological conditions • defects on equipment/plant • hazards • potential hazards • coordination requirements/issues
Mine environmental, **geological and survey data** may be in the form of:	• ventilation/gas data • deputy reports • geological hazard plan • longitudinal and cross sectional survey plans
Resources required for the allocated work may include:	• support materials • equipment/plant • power and water • personnel
Supports covered by this unit may include:	• cable bolts • flexibolts • mega-bolts • polyurethane injection

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	• shotcrete • arching/square sets • cogs (timber, fibre, crib, cans) • spialling/fore poling
Monitor may include:	• telltales • extensometer • visually or electronically measured • convergence measurements
Hazards and potential hazards may include:	• personal injury • limited vision • gas accumulation • roof, rib and floor conditions • falls • chemical hazards • compressed air • hydraulic pressure • dust • heat
Operator (**operational**) **maintenance procedures** are:	• those established and authorised for the site

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU302A Construct and maintain ventilation devices

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction and maintenance of ventilation devices in the coal mining industry. It includes: planning and preparing for operations, constructing ventilation devices, and maintaining ventilation devices. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental data*** required to complete the allocated work 1.3. Obtain, transport and prepare materials and resources required for the work in accordance with the plan, site requirements and Hazchem procedures
2. **Construct** ventilation devices	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Prepare work site in accordance with site procedures to ensure a safe working environment 2.3. Construct ventilation ***device*** in accordance with manufacturer and/or site specific requirements 2.4. Recognise and respond to ***hazardous*** and emergency situations in accordance with manufacturer's instructions and/or site procedures 2.5. Perform work in accordance with agreed plan and outcomes
3. Maintain ventilation devices	3.1. Carry out inspections in accordance with legislative and/or site requirements 3.2. Obtain, transport and prepare necessary replacement materials/equipment required for the work in accordance with work practices 3.3. Carry out maintenance work in accordance with legislative and/or site requirements 3.4. Maintain records/reports in accordance with site practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct and maintain ventilation devices:

- apply legislative, organisation and site requirements and procedures for constructing and maintaining ventilation
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- use hand and power tools
- apply construction techniques
- identify and respond to changing environmental conditions (including spontaneous combustion)
- inspect and maintain devices, equipment and materials
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which the unit may be used. This includes knowledge of the following, as required to construct and maintain ventilation:

- operational safety systems related to ventilation devices
- statutory and site ventilation requirements
- mine operational procedures
- mine geology and survey information related to ventilation devices
- types and applications of ventilation and sealing systems
- ventilation device construction processes and techniques
- ventilation device equipment and material characteristics including transportation requirements
- site environmental requirements and constraints related to ventilation devices

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for constructing and maintaining ventilation devices • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the construction and maintenance of ventilation devices • working with others to undertake and complete the construction and maintenance of ventilation devices in a way that meets all of the required outcomes • consistent timely completion of the construction and maintenance of ventilation devices that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction and maintenance of ventilation devices

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management systems and plans • OHS policy • code of practice • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirement details may include:	• nature and scope of the construction/maintenance tasks • achievement targets • locations of work • essential survey data • environmental conditions • work site conditions • support equipment/plant, including any defects • coordination requirements/issues
Mine environmental data may be in the form of:	• ventilation/gas data • deputy reports • geological data • survey data • spontaneous combustion management plan
Construction equipment may include:	• grout pumps • cement mixer • compressed air drill • borer • hoses • hand tools

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	• scaffolding • level • water traps • sampling lines • pressure gauges • gas drainage line • shut off valves • oxygen breathing apparatus • gas detection equipment
Devices may include:	• stoppings • seal • bulkheads • balance chambers • regulators • overcasts • undercasts • materials for devices under this unit including: • pre-fabricated steel • cementitious or bricks • together with foam or other secondary materials as necessary
Hazards related to goaf atmospheres may include:	• irrespirable atmospheres • noxious atmosphere • flammable and explosive mixtures

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU303A Conduct continuous miner operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting continuous miner operations in the coal mining industry. It includes: planning and preparing for operations, fitting the continuous miner, cutting and loading coal, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental***, ***geological and survey data*** required to complete the allocated work in accordance with site procedures
2. Flit continuous miner, cut and load coal	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, shutdown and isolation procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Operate ***continuous miner*** in accordance with manufacturer's instructions and/or site procedures to cut and load coal 2.4. Flit ***continuous miner*** in accordance with site procedures 2.5. Cut roadway/headings to sequence and site conditions, maintaining line and level in accordance with the development plan 2.6. Rectify or report factors adversely affecting production and monitoring systems alarms in accordance with site procedures 2.7. Identify/monitor and respond to changing geological conditions in accordance with site procedures 2.8. Recognise and respond to ***hazardous and emergency situations*** in accordance with manufacturer's instructions and/or site procedures
3. Carry out operator maintenance	3.1. Carry out ***continuous miner*** inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and/or site

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	requirements 3.4. Provide operator support during preparation for, and conduct of, maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct continuous miner operations:

- apply legislative, organisation and site requirements and procedures for continuous miner operations
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- apply hand-eye coordination
- interpret survey and geological data
- maintain horizon
- apply diagnostic and fault finding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements
- applying cable care and safety

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct continuous miner operations:

- mine operational safety procedures
- continuous miner characteristics, technical capabilities and limitations
- continuous miner operational procedures
- mine geology and survey data
- mine and face ventilation systems
- continuous miner maintenance requirements and procedures
- site environmental requirements and constraints relevant to continuous miners
- applying cable care and safety

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting continuous miner operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of continuous miner operations • working with others to undertake and complete the miner operations in a way that meets all of the required outcomes • consistent timely completion of continuous miner operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the continuous miner operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • code of practice • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirement details may include:	• equipment and plant, including any defects • cutting sequence • achievement targets • essential survey data • geological conditions • essential environmental information • hazards • potential hazards • coordination requirements/issues
Mine environmental, **geological and survey data** may be in the form of:	• ventilation/gas data • deputy reports • geological hazard plan • survey data • longitudinal and cross sectional survey plan
Emergency situations may include:	• roof and rib fall • fire • cable flash • injury to personnel • explosion • outbursts

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	• inrush • frictional ignition • loss of ventilation • gas trip
Continuous miners may be:	• radio remote controlled • manually operated • single pass • dual pass
Hazards and potential hazards may include:	• outburst • gas accumulation • flash • ignition • loss of ventilation • breaking into old workings • roof and rib collapse • water • floor condition • creep
Cutting sequence information may include locations and marking of areas to be mined.	
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU304A Conduct shuttle car operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting shuttle car operations in the coal mining industry. It includes: planning and preparing for operations, operating shuttle cars, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in operational role, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental data*** required to complete the allocated work
2. Operate shuttle cars	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up and shutdown and procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Operate ***shuttle car*** in accordance with manufacturer's instructions and/or site specific procedures to load, transport and discharge coal 2.4. Recognise and respond to ***hazardous*** and ***emergency situations*** in accordance with manufacturer's instructions and/or site procedures
3. Carry out operator maintenance	3.1. Carry out ***shuttle car*** inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and/or site requirements 3.4. Provide operator support during preparation for, and conduct of, maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct shuttle car operations:

- apply legislative, organisation and site requirements and procedures for shuttle car operations
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- apply hand eye coordination
- interpret survey and geological data
- apply diagnostic and fault finding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements
- apply cable care and safety

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in the various circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct shuttle car operations:

- mine operational safety systems
- shuttle car operational procedures
- shuttle car characteristics, technical capabilities and limitations
- mine geology and survey information
- mine and face ventilation systems
- shuttle car maintenance requirements and procedures
- site environmental requirements and constraints related to a shuttle car
- applying cable care and safety

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for shuttle car operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of shuttle car operations • working with others to undertake and complete the shuttle car operations in a way that meets all of the required outcomes • consistent timely completion of shuttle car operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the shuttle car operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirement details may include	• equipment and plant, including any defects • cutting sequence • achievement targets • essential survey data • geological conditions • essential environmental information • hazards • potential hazards • coordination requirements/issues
Mine environmental data may be in the form of:	• ventilation/gas data • deputy reports • geological hazard plan • survey data • longitudinal and cross sectional survey plans
Shuttle car types may involve remote operations of flight by the operator and may include:	• diesel • electric • battery
Hazards and potential hazards may include:	• outburst • gas accumulation • loss of ventilation • roof and ribs

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	• water • floor condition • cables • creep
Emergency situations may include:	• roof and rib fall • fire • cable flash • injury to personnel • explosion • outbursts • inrush • frictional ignition • loss of ventilation • gas trip
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU305A Conduct outburst mining operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of outburst mining operations in the coal mining industry. It includes: planning and preparing for operations, conducting mining operations in outburst conditions, and carrying out operator maintenance on outburst equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and apply ***mine environmental***, ***geological and survey data*** required to complete the allocated work in accordance with site procedures 1.3. Identify and access outburst manning requirements in accordance with the ***outburst management plan*** 1.4. Carry out outburst ***pre-operational checks*** in accordance with the ***outburst management plan***
2. Conduct mining operations in outburst conditions	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. ***Operate*** continuous miner and/or shuttle car in accordance with ***outburst management plan*** 2.3. Carry out strata control operations in accordance with ***outburst management plan*** 2.4. Maintain ventilation, ***monitor environmental conditions*** and take action in accordance with ***outburst management plan*** 2.5. Recognise and respond to ***hazardous*** and emergency situations in accordance with manufacturer's instructions and/or site procedures 2.6. 2.6 Complete and maintain records and reports in accordance with site requirements
3. Carry out **operator maintenance** on outburst equipment	3.1. Carry out ***equipment*** inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and/or site requirements

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	3.4. Provide operator support during preparation for, and conduct of, maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct outburst mining operations:

- apply legislative, organisation and site requirements and procedures for conducting outburst mining operations
- apply and interpret mine rescue procedures and manager's rules
- apply resuscitation
- test and interpret gases
- read/identify geological change
- operate communications system
- operate breathing apparatus
- apply rescue techniques
- access and interpret outburst management plan

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct outburst mining operations:

- site personal and operational safety procedures
- outburst mining procedures
- operation of fresh air base/emergency equipment station
- breathing equipment
- mine/rescue procedures
- initial response First Aid
- communications systems
- mine gases and testing procedures
- geological conditions
- mining methods/sequence
- outburst manning equation
- pre-drilling data

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting outburst mining operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of outburst mining operations • working with others to undertake and complete the outburst mining operations in a way that meets all of the required outcomes • consistent timely completion of outburst mining operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the outburst mining operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • safe working procedures (or equivalents) • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Mine environmental, **geological and survey data** may be in the form of:	• ventilation/gas data • deputy reports • geological hazard plan • survey data
Outburst Management Plan may include:	• ventilation • prediction procedures • mining systems and procedures • site specific information • authority to mine
Pre-operational checks may include:	• emergency equipment base • miner • shuttle car • services
Equipment may include:	• special miner (outburst fitted) • filtered air system • compressed air breathing equipment • air supply to face workers
Work briefings may include:	• cutting sequence • hazards • potential hazards

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	• survey data • previous shift reports/inspections • position of fresh air base/emergency equipment station • monitoring the environment
Machine operations may include:	• manual • remote
Monitoring of environment may include:	• stretch marks • cutters • calcite bands • coal changing colour • mylonite • coal softening/hardening • dyke stringers • cindered coal • change in gas make/type
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU306A Conduct shearer operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of shearer operations in the coal industry. It includes: planning and preparing, shearing and loading coal, and conducting operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Access, interpret and apply ***mine environment***, ***geological and survey data*** required to complete the allocated work in accordance with site procedures
2. Shear and load coal	2.1. Resolve ***coordination*** activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, shutdown and isolation procedures in accordance with manufacturer instructions and/or site procedures 2.3. Operate shearer in accordance with manufacturer instructions and/or site procedures to shear and load coal 2.4. Cut longwall face to sequence and site conditions, maintaining horizon and quality control in accordance with extraction plan 2.5. Act on or report monitoring systems and alarms in accordance with site procedures 2.6. Carry out parking of shearer in accordance with manufacturer instructions and/or site procedures and maintenance plan 2.7. Recognise and respond to hazardous and ***emergency situations*** in accordance with manufacturer instructions and/or site procedures
3. Conduct **operator maintenance**	3.1. Carry out shearer inspections and fault finding in accordance with manufacturer instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer instructions and/or site requirements 3.4. Provide operator support during

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	preparation for, and conduct of, maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct shearer operations:

- apply legislative, organisation and site requirements and procedures for shearer operations
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply hand eye coordination
- apply diagnostic and fault finding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct shearer operations:

- site operational safety procedures
- longwall operational processes and procedures
- shearer operational procedures
- shearer equipment characteristics and limitations
- mine geology and survey information
- mine ventilation systems
- shearer maintenance systems and procedures
- site environmental requirements and constraints relevant to the shearer

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting shearer operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of shearer operations • working with others to undertake and complete the shearer operations that meets all of the required outcomes • consistent timely completion of shearer operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the shearer operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirements may be in the form of:	• equipment, including any defects • cutting height • next cutting sequence • achievement targets • essential survey data • geological conditions • hazards • potential hazards • coordination requirements/issues
Mine environmental, **geological and survey data** may be in the form of:	• ventilation/gas data • deputy reports • geological hazard plan • survey data • longitudinal and cross sectional survey plans
Emergency situations may include:	• roof and rib fall • fire • flash/ignition • loss of ventilation • injury to personnel • explosion • inrush

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Hazards/potential hazards may include:	• outburst • high pressure hoses • gas accumulation • friction ignition • roof • water • dust • windblast • weighting on the face • heat
Coordination may include:	• support personnel and chocks • pantech • armoured face conveyors • breaker stage loader • panel belt
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU307A Conduct longwall face equipment operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of longwall face operations in the coal industry. It includes: planning and preparing for operations, operating longwall equipment, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Access, interpret and apply ***mine environmental*** data required to complete the allocated work in accordance with site procedures
2. Operate longwall equipment	2.1. Resolve ***coordination activities*** with others at the site prior to commencement of, and during the work activity 2.2. Carry out pre-start, start-up, shutdown and isolation procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Advance ***roof support equipment*** in sequence, or according to site conditions, to maintain correct face alignment and support roof in accordance with extraction plan 2.4. Operate ***longwall coal conveying equipment*** in accordance with manufacturer's instructions and/or site procedures 2.5. Identify/monitor and respond to changing geological conditions in accordance with site procedures 2.6. Recognise and respond to ***hazardous*** and ***emergency situations*** in accordance with manufacturer's instructions and/or site procedures 2.7. Rectify or report factors adversely affecting production and monitoring systems alarms in accordance with site procedures
3. Carry out operator maintenance	3.1. Carry out ***longwall face inspections*** and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices

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	3.3. Carry out minor maintenance to manufacturer's instructions and/or site requirements 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct longwall face operations:

- apply legislative, organisation and site requirements and procedures for longwall face operations
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply diagnostic and fault finding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct longwall face operations:

- site operational safety procedures
- longwall operational processes and procedures
- longwall face equipment operational procedures
- longwall face equipment characteristics and limitations
- mine geology and survey information
- mine ventilation systems
- longwall face equipment maintenance systems and procedures
- site environmental requirements and constraints relevant to longwall face equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting longwall face equipment operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of longwall face equipment operations • working with others to undertake and complete the longwall face equipment operations that meets all of the required outcomes • consistent timely completion of longwall face equipment operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the longwall face operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • OHS policy • code of practice • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirements details may include:	• equipment, including defects • cutting height • next cutting sequence • achievement targets • essential survey data • geological conditions • hazards and potential hazards • coordination requirements/issues
Mine environmental, **geological and survey data** may be in the form of:	• ventilation/gas data • deputy reports • geological hazard plan • longitudinal and cross sectional survey plans
Roof support equipment may include:	• shield types • control systems • test equipment
Longwall coal conveying equipment may include:	• armoured face conveyors • stage loaders • boot ends • control systems
Coordination activities may include those with the shearer	

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operator and the longwall ancillary equipment (pantech) operator	
Hazards may include:	• high pressure hoses • high gas • faults • adverse mining conditions • face spall
Emergency situations may include:	• lack of ventilation • gas inundation (high gas levels) • roof/rib fall • fire • flood • flash/ignition • emergency stop procedures • injury to personnel • explosion
Longwall face inspections may include:	• shift inspection • daily inspection • weekly inspection • monthly inspection • 3-monthly inspection

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU308A Install and recover longwall equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation and recovery of longwall equipment in the coal industry. It includes: planning and preparing, installing and recovering equipment, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Access, interpret and apply ***mine environment***, ***geological and survey data*** required to complete the allocated work
2. Install and recover equipment	2.1. Resolve ***coordination activities*** with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, shutdown and isolation procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Complete ***installation***, ***recovery*** and machine operation in accordance with manufacturer's instructions and the ***longwall installation***/***recovery*** plan 2.4. Act upon or report factors adversely affecting the ***installation and recovery*** in accordance with site procedures 2.5. Maintain ventilation, identify/monitor changing geological conditions and take action in accordance with site procedures 2.6. Recognise and respond to ***hazardous*** and ***emergency situations*** in accordance with manufacturer's instructions and/or site procedures 2.7. Leave workplace safe and in accordance with site procedures
3. Carry out operator maintenance	3.1. Carry out ***longwall equipment*** inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and/or site requirements

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	3.4. Provide operator support during preparation for, and conduct of, maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install and recover longwall equipment:

- apply legislative, organisation and site requirements and procedures for the installation and recovery of longwall equipment
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply hand-eye coordination
- apply diagnostic and fault finding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install and recover longwall equipment:

- site operational safety procedures
- longwall equipment operational processes and procedures
- longwall equipment characteristics, uses and limitations
- site geology and survey data
- site ventilation systems
- longwall equipment maintenance systems and procedures
- site environmental requirements and constraints relevant to longwall equipment installation and recovery

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing and recovering longwall equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the installation and recovery of longwall equipment • working with others to undertake and complete the installation and recovery of longwall equipment in a way that meets all of the required outcomes • consistent timely completion of longwall equipment installation and recovery that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation and recovery of longwall equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirements details may include:	• equipment, including defects • cutting height • next cutting sequence • achievement targets • essential survey data • geological conditions • hazards • potential hazards • coordination requirements/issues
Mine environmental, **geological and survey data** may be in the form of:	• ventilation/gas data • Deputy reports • geological hazard plan • survey data
Emergency situations may include:	• roof and rib fall • fire • flash • explosion • outbursts • inrush
Longwall equipment to be installed or recovered may include:	• pantech • AFC

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	• pans • tailgate/maingate • breaker line supports • shearer • cables • airhoses • hydraulic chocks • bretby monorail
Hazards/potential hazards may include:	• heavy machinery • gas accumulation • roof-rib • water • dust • diesel fumes • high pressure hoses • lifting • pulling equipment • heat
Equipment may include:	• chock transporter • impro • mine dozer (electric or diesel) • chainblocks • winches • roof bolters • multipurpose vehicles • re-reelers • load haul dump vehicles • E-Frame • diesel locos
Coordination activities may include those with:	• equipment operators • transportation operators
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU309A Operate breaker line supports

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of breaker line supports in the coal industry. It includes planning and preparing, tramming and positioning breaker line supports, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Access, interpret and apply ***mine environmental***, ***geological and survey data*** required to complete the allocated work
2. Tram and position breaker line supports	2.1. Resolve ***coordination activities*** with others at the site prior to commencement of, and during, the work activity. 2.2. Carry out pre-start, start-up, shutdown and isolation procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Operate ***breaker line support*** in accordance with manufacturer's instructions and/or site procedures 2.4. Recognise and respond to ***hazardous*** and ***emergency situations*** in accordance with manufacturer's instructions and/or site ***procedures***
3. Carry out **operator maintenance**	3.1. Carry out ***breaker line support*** inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and/or site requirements 3.4. Provide operator support during preparation for, and conduct of, maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate breaker line supports:

- apply legislative, organisation and site requirements and procedures for breaker line supports operations
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply diagnostic and fault finding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements
- apply hand-eye coordination

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate breaker line supports:

- site operational safety systems
- site operational procedures and support rules
- breaker line support characteristics, technical capabilities and limitations
- site geology and survey information
- site and face ventilation systems
- breaker line support maintenance requirements and procedures
- site environmental requirements and constraints related to BLS

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating breaker line supports • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of breaker line supports operations • working with others to undertake and complete the breaker line supports operations in a way that meets all of the required outcomes • consistent timely completion of breaker line supports that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the breaker line supports operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirements details may include:	• machines, including any defects • cutting sequences • cut cycles • essential survey data • geological conditions • essential environment information • hazards • potential hazards • coordination requirements/issues
Mine environmental, **geological and survey data** may be in the form of:	• ventilation/gas data • deputy reports • geological data • survey data • longitudinal and cross sectional survey plans
Breaker line support operations may include:	• tramming/positioning/storing • setting • lowering • radio/pendant controls • cable handling • shutdown procedures
Emergency situations may	• roof/rib falls

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include:	
Hazards/potential hazards may include:	• roof, rib and floor conditions • gas accumulation • setting • cable damage
Operational **procedures** may be varied depending on the number of breaker line supports used.	
Coordination activities may include those with:	• shuttle car operator • cable handler • tradespersons • miner driver • deputy
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU310A Conduct flexible conveyor train (FCT) operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of flexible conveyor train (FCT) operations in the coal industry. It includes: planning and preparing for operations, operating flexible conveyor trains, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Access, interpret and apply ***mine environmental data*** required to complete the allocated work
2. Operate flexible conveyor train	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, shutdown and isolation procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Operate ***FCT*** in accordance with manufacturer's instructions and/or site procedures to load and transport coal 2.4. Install/retract ***monorails***, if required, in accordance with manufacturer's instructions and/or site procedures. 2.5. Recognise and respond to ***hazardous*** and ***emergency situations*** in accordance with manufacturer's instructions and/or site procedure
3. Carry out **operator maintenance**	3.1. Carry out conveyor train inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and/or site requirements 3.4. Provide operator support during preparation for, and conduct of, maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct FCT operations:

- apply legislative, organisation and site requirements and procedures for FCT operations
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply diagnostic and fault finding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements
- apply hand-eye coordination

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct FCT operations:

- mine operational safety procedures
- FCT operational procedures
- FCT characteristics, technical capabilities and limitations
- site geology and survey information
- mine and face ventilation systems
- FCT maintenance requirements and procedures
- site environmental requirements and constraints related to FCT

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting FCT operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of FCT operations • working with others to undertake and complete the FCT operations in a way that meets all of the required outcomes • consistent timely completion of FCT operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the FCT operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirements details may include:	• machines, including any defects • cutting sequences • cut cycles • essential survey data • geological conditions • essential environment information • hazards • potential hazards • coordination requirements / issues
Mine environmental, **geological and survey data** may be in the form of:	• ventilation/gas data • deputy reports • geological data • survey data • longitudinal and cross sectional survey plans
Breaker line support operations may include:	• tramming / positioning/storing • setting • lowering • radio / pendant controls • cable handling • shutdown procedures
Emergency situations may	• roof/rib falls

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include:	
Hazards/potential hazards may include:	• roof, rib and floor conditions • gas accumulation • setting • cable damage
Operational **procedures** may be varied depending on the number of breaker line supports used.	
Coordination activities may include those with:	• shuttle car operator • cable handler • tradespersons • miner driver • deputy
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU311A Monitor control processes

Modification History

Not applicable.

Unit Descriptor

This unit covers the monitoring of control processes in the coal industry. It includes planning and preparing for operations, monitoring and controlling operations, and recording operational information. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Check ***monitoring equipment*** in accordance with site procedures and/or manufacturer instructions 1.3. Identify and locate all ***equipment*** and services under monitoring control in accordance with site procedures
2. Monitor and control operations	2.1. ***Monitor*** mine ***processes*** to identify ***equipment*** availability, ***service*** availability and continuity of production 2.2. Report faults within ***processes***, to ***equipment*** or ***services***, to the appropriate authority for remedial action in accordance with site procedures 2.3. Recognise and respond to hazardous and emergency situations in accordance with manufacturer instructions and/or site procedures 2.4. Provide status reports to those who are or may be affected by the faults or disruption to production 2.5. Monitor and report remedial actions and the effects on production to the appropriate authority in accordance with site procedures
3. Record operational information	3.1. Provide handover reports in accordance with site procedures 3.2. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to monitor control processes:

- apply legislative, organisation and site requirements and procedures for monitoring control processes
- apply personal and operational safety requirements
- start, operate and close down monitoring equipment
- read and interpret technical/operational monitoring information and reports
- communicate effectively on monitoring information
- maintain records

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to monitor control processes:

- site personnel and operational safety procedures
- mining systems in use
- mine operational procedures
- monitoring systems characteristics, uses and limitations
- monitoring equipment and its operations/procedures
- mine plan and layout
- mine system schematics
- site communication procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for monitoring control processes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of control processes monitoring • working with others to undertake and complete the control processes monitoring in a way that meets all of the required outcomes • consistent timely completion of control processes monitoring that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the control processes monitoring

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirements details may include:	• standard operating procedures • status reports • notice of known or anticipated changes • specific responsibilities for the shift • coordination requirements/issues
Monitoring equipment may be located:	• underground • on the surface
Equipment used for monitoring may include:	• visual display units • logical programmable control units • communication devices including two-way radio, DACs, phones
Processes, **equipment and services** monitored may include:	• conveyors • fans • sample analysis reports • power and production tonnage/rates
Monitoring may include monitoring of:	• power failure • ventilation pressure changes • lock out • belt slip • gas concentration

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	• production tonnage/rates

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU401A Conduct special roadway operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of special roadway operations in the coal industry. It includes planning and preparing, driving special roadways/faceline, brushing floor and roof, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Access, interpret and apply ***mine environmental***, ***geological and survey data*** required to complete the allocated work in accordance with site procedures
2. Drive special roadways/faceline	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up and shutdown procedures in accordance with manufacturer's instructions and/or site procedures 2.3. Operate ***equipment*** according to manufacturer's specifications and/or site requirements 2.4. Form ***roadway***/***headings***/***face line*** to sequence, maintaining line and level and other site conditions, in accordance with site requirements 2.5. Monitor changes to geological conditions and maintain ventilation in accordance with the site requirements 2.6. Recognise and respond to ***hazardous*** and ***emergency situations*** in accordance with manufacturer's instructions and/or site procedures
3. Brush floor and roof	3.1. Observe survey marks and roof and rib support rules in accordance with site requirements 3.2. Profile ***roadways***/headings to sequence, maintaining line and level and other site conditions, in accordance with site requirements
4. Carry out operator maintenance	4.1. Carry out ***equipment***/plant inspections and fault finding in accordance with manufacturer's instructions and/or site requirements 4.2. Carry out routine operational servicing,

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	lubrication and housekeeping tasks in accordance with manufacturer's instructions and/or site procedures and practices 4.3. Carry out minor maintenance to manufacturer's instructions and/or site requirements 4.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site requirements 4.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct special roadway operations:

- apply legislative, organisation and site requirements and procedures for conducting special roadway operations
- apply operational safety requirements
- access, interpret and apply technical information and plans
- predict likely changes in roadway/faceline conditions and geology
- operate plant and equipment efficiently in special and difficult conditions
- interpret and apply survey data

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct special roadway operations:

- operational safety requirements
- geological features of special conditions, including faults, dykes, intrusions and high stress zones
- mine operational procedures
- the impact of changing conditions on equipment plant and mining operations
- support techniques and their applications in special operations
- ventilation techniques for special operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of special roadway operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of special roadway operations • working with others to plan, prepare and conduct special roadway operations • evidence of the consistent successful special roadway operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the special roadway operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the special roadway operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • code of practice • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Mine environmental, **geological and survey data** may be in the form of:	• ventilation/gas data • deputy reports • geological hazard plan • longitudinal and cross sectional survey plans
Work requirement details may include:	• nature and scope of task • achievement targets • locations • headings and other essential survey information • working and geological conditions • ventilation conditions • equipment/plant allocation, including any defects • other resources • hazards and potential hazards • coordination requirements/issues
Equipment may include:	• continuous miner • shuttle cars • drills • explosives

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	• shearer • road header • ramcar
Roadways/headings/faceline may be formed or profiled by:	• cutting machines • drilling • blasting
Hazardous and emergency situations may be those associated with:	• gas accumulation • water • floor • roof • rib • rock burst/outburst • dust • inrush
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU402A Apply spontaneous combustion management measures

Modification History

Not applicable.

Unit Descriptor

This unit covers the application of spontaneous combustion management measures in the coal industry. It includes preparing for the identification and recognition of hazards, identifying and clarifying operational requirements and control measures, and implementing and contributing to spontaneous combustion management measures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for the identification and recognition of hazards	1.1. Identify the fundamentals of spontaneous combustion 1.2. Identify ***hazards*** related to ***mine gases*** and variations in barometric pressure 1.3. Identify the effects of ***mine ventilation structures*** and the potential to bring about spontaneous combustion 1.4. Identify and clarify ***physical spontaneous combustion indicators*** relevant to the work area 1.5. Identify and clarify ***gaseous spontaneous combustion indicators*** relevant to the work area. 1.6. Identify the range of causes of spontaneous combustion ***hazards*** related to the underground ***coal stowage*** and conveyor systems
2. Identify and clarify operational requirements and control measures	2.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 2.2. Identify methods and purposes of the mine atmosphere monitoring systems 2.3. Identify the methods and purposes of ***control measures for the elimination or minimisation of spontaneous combustion risks***
3. Implement and contribute to spontaneous combustion management measures	3.1. Monitor and report on the spontaneous combustion status of the local work area 3.2. Minimise ***hazards*** associated with the stowage of coal through: inspections and monitoring; maintenance of high standards of housekeeping; timely reporting of situations requiring further actions 3.3. Identify and report errors or omissions in spontaneous combustion procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to apply spontaneous combustion management measures:

- apply legislative, organisation and site requirements and procedures for the application of spontaneous combustion management measures
- access, interpret, apply:
  - general information on spontaneous combustion
  - site/legislative requirements with respect to spontaneous combustion
  - records and reports
- briefings and handover details
- plan and organise work
- recognise and report incidents and potential hazards associated with spontaneous combustion

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to apply spontaneous combustion management measures:

- spontaneous combustion causes and hazards
- spontaneous combustion management plan requirements
- mine ventilation structures
- mine gases
- geological data
- hazard assessment procedure
- mine operation procedures
- gas monitoring systems
- spontaneous combustion indicators
- general housekeeping and reporting measures with respect to spontaneous combustion

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application of spontaneous combustion management measures • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the application of spontaneous combustion management measures • working with others to plan, prepare and conduct the application of spontaneous combustion management measures • evidence of the consistent successful application of spontaneous combustion management measures
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application of spontaneous combustion management measures
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the application of spontaneous combustion management measures

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • OHS policy • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazards resulting from spontaneous combustion may include:	• production of noxious and irrespirable gases • fires • explosive mixtures
Mine gases may include seam gases or gases from other than mined seam such as:	• methane • carbon dioxide • hydrogen sulphide • normal atmospheric gases • carbon monoxide
Ventilation structures may include:	• stoppings • overcasts • regulators • preparation seals • fire doors • bulk heads • goaf seals • final seals • pressure chambers
Physical spontaneous combustion indicators may include:	• smoke • haze • sweating • smell • heat
Gaseous spontaneous combustion indicators may	• CO make • Graham's ratio

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include increased production of carbon monoxide, hydrogen and hydrocarbons or the use of indicator ratios such as:	• other ratios as determined suitable
Coal stowage hazards may include:	• spillage coal • waste products

Mine atmosphere monitoring systems may include:	• continuous monitoring
	• portable (hand held) monitoring
	• collection of bag samples
	• gas chromatography
	• ventilation measurements
	• status monitoring, including:
	  • physical indications of spontaneous combustion
	  • gaseous indications of spontaneous combustion
	  • changes in ventilation conditions
	  • defective seals
	• damage to monitoring systems / equipment

Spontaneous combustion management plan may include procedures for:	• mine atmosphere monitoring • reporting requirements • auditing • ventilation systems and usage • inertisation techniques • mine plan • action plan • response plans • emergency procedures • individual group responsibilities • training and education procedures
Minimisation of risks may include:	• inspections and monitoring • maintenance of high standards of housekeeping • timely reporting of situation requiring further actions
Control measures for the elimination or minimisation of spontaneous combustion risks may include:	• grouting • digging-out • sealing • water infusion • inertisation

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Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU403A Apply and monitor the gas management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of the gas management plan in the coal industry. It includes planning and preparing for the application of the gas management plan, applying the gas management plan, and applying gas management system maintenance procedures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between States, Territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the application of the gas management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Communicate and explain responsibilities and tasks in an effective and timely manner 1.3. Identify, obtain and allocate resources required for the application of the ***gas management plan*** 1.4. Identify individual ***training*** needs
2. Apply the gas management plan	2.1. Identify, measure and ***interpret*** the impact of changes in composition, the concentration of gas and ***gas make***, and associated ***hazards*** on the ***mine atmosphere*** 2.2. Identify and ***interpret*** the impact of ***mine factors*** on the mines ***gas management*** 2.3. Identify, assess and apply ***hazard*** control procedures associated with gas drainage and ***outburst mining conditions*** 2.4. Apply procedures for the installation, operation and maintenance of ***mine gas*** monitoring systems 2.5. Apply procedures for the installation and operation of ***gas management devices*** and systems 2.6. Apply systems and procedures for the collection of gas samples 2.7. Record and report ***monitoring system data*** in accordance with the ***gas management plan*** 2.8. Investigate ***changes*** in ***mine atmosphere*** status and report 2.9. Interpret and apply procedures covering the relocation, operation and maintenance of drilling rigs and ***infrastructure*** according to site requirements 2.10. Respond to ***alarms*** raised in accordance with the ***gas management plan*** 2.11. Apply emergency and evacuation procedures in accordance with the ***safety management system*** 2.12. Participate in systems ***audit*** and review requirements in accordance with the

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	gas management plan
3. Apply gas management system **maintenance** procedures	3.1. Carry out inspections and ensure that repair and ***maintenance*** activities are conducted in accordance with the ***gas management plan*** 3.2. Record, report and review ***maintenance*** activities in accordance with the ***gas management plan***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to apply and monitor the gas management plan:

- apply legislative, organisation and site requirements and procedures for applying and monitoring the gas management plan
- access, interpret and apply technical information
- access and interpret archival and historical gas information related to the mine
- interpret and apply mathematical and scientific theorems/laws related to gas management
- collect, collate evaluate and report gas data
- conduct investigations and prepare reports
- communicate effectively in the workplace
- access, evaluate and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- identify training needs
- apply risk management processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to apply and monitor the gas management plan:

- legislative and site requirements for ventilation, including air quality, air quantity, maximum/minimum values, control and distribution, flammable gas limits, ventilation fan, gas monitoring inspections and recording/reporting
- the methods of panel gas management and their application/limitations, including forcing and exhausting, homotropal and antitropal (and in conjunction with these, the use of goaf bleed or back return), auxiliary fans, coursed ventilation (narrow side/wide side), recirculation, machine mounted scrubber systems, ducted systems, compressed air venturis and bleeders
- the impact of mining techniques and mine and panel layout on panel gas management
- the impact of differing geological features and conditions on gas management, including faults, dykes, intrusions and strata deformities
- the impact of coal characteristics and coal seam gradients on mine gas management
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection

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- mine fires; the types, sources of ignition, possible impacts on gas management
- mine explosions; the types, ignition sources and possible effects on gas management
- pressure changes; causes and the impacts on gas management
- heat/humidity; the sources and factors which may impact on gas management
- mine fans; fan types, applications and limitations
- gas control devices; the types, purposes, design criteria and specifications, distribution/placement criteria and limitations
- fixed gas monitoring systems types, uses and limitations
- portable monitoring equipment, types, uses and limitations
- computer-based systems used for mine gas analysis
- the development requirements and processes of the gas management plan
- types, characteristics, purposes and responses to alarms and trigger points/levels
- ventilation surveys, the types, frequency and method for conducting, including pressure/temperature/gas
- audit and review processes and techniques
- emergency procedures and disaster plan responses/measures
- the general use and application of ventilation theory, including
  - gas laws, including Charles and Boyle
  - natural ventilation
  - Coward's Triangle
  - Graham's Ratio
  - Ellicott's Triangle
  - gas make
  - air quantity measurement
  - control device leakage
  - duct leakage
- mine and goaf ventilation systems
- the impact of water on ventilation
- site environmental monitoring requirements
- inertisation techniques
- general purpose and application of sling psychrometer, anemometer, velometer
- the general effects of velocity pressure, duct and stopping leakage
- strata geology, including coal seam gradient, moisture content, friability, the porous features of the coal seam, stresses and intrusions, and its impact on gas drainage
- gas surveys; the types, frequency and method for conducting, including pressure/quantity/temperature and gas
- impacts of intersecting holes and hole design
- in-seam drilling techniques
- the impact of differing geological features and conditions on outburst, including faults, dykes, intrusions and strata deformities

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- outburst indicators
- core sampling techniques
- training systems
- emergency response and evacuation planning processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying and monitoring the gas management plan • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of gas management plan application and monitoring • working with others to plan, prepare and conduct gas management plan application and monitoring • evidence of the consistent successful gas management plan application and monitoring
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application and monitoring of the gas management plan
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the application and monitoring of the gas management plan

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mine gases may be seam gases or gases from introduced sources, and may include:	• methane • carbon dioxide • oxides of nitrogen • hydrogen • carbon monoxide • sulphur dioxide • hydrogen sulphide • hydrocarbons • combinations • oxygen • nitrogen
Alarm (also known as trigger level) systems and action plans may include those for:	• gas concentration/make/ratios • spontaneous combustion (physical and gaseous) • combustion indicators • condition monitoring for fans (vibration/temperature/current/failures) • ventilation devices • monitoring hardware • virgin gas content of the coal seam
Audit is the validation process to ensure the system, procedures, processes meet the established objectives and are implemented.	
Coal seam characteristics may include inherent factors such as:	• rank • petrology • moisture • particle size

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	• seam gas - composition and content • pyrites • permeability ***Or depositional factors such as***: • seam thickness • multiple and rider seams • seam dip • depth of cover • cleats • friability

Changes to mine atmosphere conditions may include those resulting from:	• planned disruptions
	• changes in barometric pressure
	• fall of ground
	• fan changes/failure
	• ventilation control device changes/failure
	• outburst
	• holing into previous workings
	• re-circulation
	• ventilation circuit changes
	• natural ventilation pressure changes
	• explosions
	• changes in ambient temperature/humidity
	• fires
	• equipment movement
	• flooding of roadways
	• effects of re-circulation including:
	  • build up of contaminant concentration (gas, fumes, dust, heat)
	  • decrease in oxygen

Gas drainage management plan may include procedures for:	• gas drainage drilling program • gas or geological anomaly detection • mine atmosphere monitoring • stimulation techniques • installation, inspection and maintenance of goaf seals • reporting requirements • auditing • ventilation systems and usage • mine plan • action plans • systems of mining

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	• response plans • emergency procedures • individual and group responsibilities • training and education procedures
Gas drainage system monitoring may include:	• continuous monitoring • leakage monitoring (laser beam technology) • portable (hand held) monitoring • collection of bag samples • identifying pipeflow and pressure requirements • ventilation measurements from relevant areas
Gas make characteristics may include:	• gas content • gas pressure • adsorption • desorption • hydrostatic pressure • strata moisture content • permeability and porosity
Gas management includes controls for gas drainage and gas outburst.	
Gas management devices and methods may include:	• gas drainage • infusion • scrubbers • automatic gas detectors • tube bundle systems • de-gassing device on auxiliary fans • gas monitoring systems • inertisation systems • monitoring devices, including: • barograph • tube bundle • real time telemetry • portable (hand held) monitoring • bag samples • gas chromatography
Ventilation devices may include:	• stoppings • overcasts • regulators • preparation seals • ventilation doors • bulk heads

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	• goaf seals • final seals • pressure chambers • air locks
Gas management plan may include procedures for:	
Mine gases may include:	• mine atmosphere monitoring • reporting requirements • auditing • ventilation systems and usage • inertisation techniques • mine plan • trigger action response plans • emergency procedures • individual group responsibilities • training and education • indicators for the requirement to develop a gas drainage management plan • indicators for the requirement to develop a gas outburst management plan • criteria for mine ventilation including: • legislative requirements • mine ventilation management plan • measures to reduce and/or control seam gas • introduced gas • fumes and dust • temperature/humidity and maximum/minimum velocity specifications • ventilation efficiency • pressure and quantity
Gas management plans establish procedures for maintaining a safe environment may include:	• hazard identification and quantification • risk assessment • authority and responsibility • controls established to managed identified risks • reporting and communication • document control • audit and review
Gas management procedures may include those for:	• construction • action response • permit to work/mine • condition monitoring

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	• auditing • maintenance • atmosphere monitoring • ventilation system control • communication systems • survey procedures • sealing procedures • changes • blocked bore holes and standpipes • pipe pressures and flows • gas analysis • training and recording/reporting
Gas management training may apply to:	• mine workers • tradespeople • permanent employees • contractors • mine officials • other special requirements
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management).	
Hazards may include:	• irrespirable atmosphere • noxious atmospheres • flammable or explosive mixtures • outburst
Installations where gas drainage **hazards** may be assessed include:	• vacuum pumps • pipes • stand pipes • gas separators and casing • surface installations • gas drainage plant including building and surface location • valves • hoses • water pumps • flame and lightning arresters • power supply to bore holes • cleaning equipment • air compressors

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	• electricity and water services • pressure gauges • hydration plants
Interpret is defined as: the understanding needed by the person within their job role.	
Maintenance of the ventilation system may include:	• inspection • servicing • repair
Methods of ventilation may include:	• antitropal • homotropal • flank returns • ascensional / descensional • bleeder • Z/U/Y systems • overlapping systems • other combinations
Mine atmosphere refers to all areas in general mine ventilation district and beyond into waste working and goafs/gobs in the mine.	
Mine atmosphere monitoring may include:	• continuous monitoring • portable (hand held) monitoring • collection of bag samples • gas chromatography • ventilation measurements from all areas of the mine, including sealed areas • waste workings
Mine factors which may **impact** on gas management may include:	• mining direction • geological structures • ventilation • results of core samples • extraction rate • strata control • mining method • Geological and physical conditions of the seam and surrounding strata which may contribute to outburst potential, including: • cutters • changing cleat

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	• coal colour • free gas into atmosphere • mylonite • gas content and composition • over and underlying strata (including depth, strength and type) • permeability of seam and strata • induced stresses • faults • intrusions • strata deformities
Monitoring includes that related to:	• atmospheric pressure • mine atmosphere • ventilation pressure • temperature • fire • the condition monitoring of ventilation devices • gas drainage monitoring
Monitoring system data may include:	• composition • concentration • rate of change • barometer • gas make • gas threshold levels
Procedures for **outburst mining conditions** may include :	• mine atmosphere monitoring • reporting requirements • auditing • ventilation systems and usage • pre-drilling techniques • initiation techniques • mine plan • action plans • response plans • emergency procedures • individual/group responsibilities • training and education procedures • authority to mine
Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood*	

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(definition from AS/NZS 4360:1999 Risk Management).	
Specific gas emissions may include seam gases or gases from introduced sources and may include but not be limited to:	• methane • carbon dioxide • hydrogen sulphide

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU404A Apply and monitor the gas drainage management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of the gas drainage management plan in the coal industry. It includes planning and preparing for the application of the gas management plan, applying the gas drainage management procedures, apply gas drainage management system maintenance procedures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the application of the **gas** management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and clarify roles and responsibilities, as specified in the ***gas drainage management plan*** 1.3. Communicate and clarify work group and individual responsibilities and tasks in an effective and timely manner 1.4. Identify, obtain and allocate resources required for the application of the ***gas drainage management plan*** 1.5. Identify and satisfy individual training needs by accessing the established ***gas drainage management training*** program and systems 1.6. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to gas drainage management procedures
2. Apply the gas drainage management procedures	2.1. Identify and interpret the impact of changes of gas make, composition, concentration of gas on the ***mine atmosphere*** 2.2. Identify and apply ***hazard*** control procedures associated with gas drainage 2.3. Apply ***gas monitoring system*** installation, operation and maintenance procedures 2.4. Apply drainage service extension and recovery procedures 2.5. Apply gas drainage system maintenance requirement procedures 2.6. Apply procedures incorporating methods and practices to minimise potential damage to the gas drainage system 2.7. Apply and monitor ***action*** levels established to minimise the ***hazards*** of gas drainage 2.8. Apply gas drainage system information recording and reporting procedures 2.9. Contribute to systems ***audit*** and review requirements in accordance with the ***gas drainage management plan***

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3. Apply gas drainage management system maintenance procedures	3.1. Carry out inspections, repair and maintenance activities, in accordance with the ***gas drainage management plan*** 3.2. Record, report and review maintenance activities in accordance with the ***gas drainage management plan***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to apply and monitor the gas drainage management plan:

- apply legislative, organisation and site requirements and procedures for applying and monitoring the gas drainage management plan
- access, interpret and apply:
  - technical information related to gas drainage
  - site/legislative requirements
  - geological reports
  - briefings and handover details
- access, interpret and apply relevant gas drainage data
- assess the risks and consequences of gas drainage
- apply procedures appropriate to mine operations for management of gas drainage
- plan and coordinate work
- operate hand held monitoring equipment
- identify training needs related to gas drainage

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to apply and monitor the gas drainage management plan:

- legislative and statutory requirements which may include those for gas drainage drilling, gas drainage installation, ventilation requirements, return airways gas levels, intake airway gas accumulated levels, gas control and distribution, environmental management, local government requirements, inspections and reporting
- the methods of gas drainage and their applications/limitations against the mine design, mine and panel ventilation systems, systems of mining current and future mine development
- the impact of gas drainage on mining techniques, mine and panel design and production output
- the impact of the strata geology and coal seam characteristics on the gas drainage management plan, including coal seam gradient, moisture content, friability, the porous features of the coal seam, stresses and intrusions
- outburst mining monitoring procedures
- drilling options and related equipment and techniques

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- hazard management processes and techniques
- the effects of the type and quantity of gas in the coal seam
- the impacts of accumulation of coal dust after gas drainage has been completed
- pressure changes; causes, the impacts on the ventilation system, and the effects on gas drainage
- heat/humidity; the sources an factors which may impact on gas drainage and personnel
- mine fans; fan laws, fan types, performance characteristics, configurations, applications and limitations in association with the gas drainage management plan
- ventilation control devices; the types, purposes, design criteria and specifications, distribution/placement criteria and limitations in association with the gas drainage management plan
- ventilation control devices; the types, purposes, design criteria and specifications, distribution/placement criteria and limitations
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders
- fixed gas drainage monitoring systems types, characteristics, uses and limitations
- portable monitoring equipment for gas drainage purposes, types, characteristics, uses and limitations
- functions, capabilities, advantages, limitations and uses of gas drainage computer modelling and simulation techniques
- computer-based systems for mine environment analysis
- gas drainage management plan development requirements and processes
- gas drainage surveys; the types, frequency and method for conducting including pressure/quantity/temperature and gas
- processes and techniques for determining alarms and trigger points/levels
- audit and review processes and techniques
- emergency response and disaster planning processes and techniques
- general uses and applications of ventilation theory, including:
  - gas laws including Charles and Boyle
  - natural ventilation pressures
  - gas make
  - leakage
  - Kirchoff's laws
- mine operational procedures
- strata control systems and their affects on gas drainage
- mine and goaf ventilation systems
- underground water management principles and systems
- impacts of intersecting holes and hole design
- site environmental monitoring requirements
- statutory and mine reporting procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying and monitoring the gas drainage management plan • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of gas drainage management plan application and monitoring • working with others to plan, prepare and conduct the application and monitoring of the gas drainage management plan • evidence of the consistent successful application and monitoring of the gas drainage management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application and monitoring of the gas drainage management plan
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the application and monitoring of the gas drainage management plan

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Gas drainage management plans establish procedures for maintaining a safe environment including:	• hazard identification and quantification • risk assessment • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review
Gas drainage management plan may include procedures for:	• gas drainage drilling program • gas or geological anomaly detection • mine atmosphere monitoring • stimulation techniques • goaf walls • reporting requirements • auditing • ventilation systems and usage • mine plan • action plans • systems of mining • response plans • emergency procedures • individual and group responsibilities • training and education procedures
Gas drainage management training applies to:	• mine workers • tradesperson • permanent employees • contractors

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	• mine officials • other special requirements
Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.	
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management).	
Hazards may include:	• irrespirable atmosphere • noxious atmosphere • flammable or explosive mixtures • outbursts • induced outburst • gas under pressure • location of drainage pipes • static electricity
Gas drainage system maintenance requirement procedures may include those for:	• construction • action response • permit to work • condition monitoring • auditing • maintenance • document control • atmosphere monitoring • ventilation system control • communication systems • survey procedures • standard operating procedures • changes • training • recording/reporting
Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.	

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Audit is the validation process to ensure the system, procedures, processes meet the established objectives and are implemented.	
Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood* (definition from AS/NZS 4360:1999 Risk Management).	
Principles of mine design include:	• recovery • reserve optimisation • mining direction • geological structures • ventilation • strata control • mining method • productivity • environmental considerations • access
Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.	
Mine gases may be seam gases or gases from introduced sources and may include but not be limited to:	
Ventilation systems may include the use of:	• main mine fan • auxiliary fans • brattice • regulators • seals • stoppings • overcasts • ventilation doors • surface drainage boreholes • pressure chambers
Geological conditions may	• faults • dykes

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include:	• intrusions • strata deformities • induced stresses • depth of overlaying strata • strength of immediate strata • under and over the coal seam • mining lease gas make
Coal seam characteristics may include inherent factors such as:	• rank • petrology • moisture • particle size • seam gas make • pyrites. • Or depositional factors such as: • seam thickness • multi seams • seam dip • depth of cover • cleats • friability • interaction of other coal seams and gas makes • clay bands within the coal seam • molorites zones
Gas make characteristics may include:	• gas content • gas pressure • adsorption • desorption • hydrostatic pressure • strata moisture content • permeability and porosity • tectonic stress
Gas drainage monitoring may include:	• continuous monitoring • leakage monitoring (laser beam technology) • portable (hand held) • monitoring • collection of bag samples • pipeflow and pressure measurements • gas chromatography • ventilation measurements from relevant areas
Gas drainage infrastructure may include:	• vacuum pumps • pipes

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	• stand pipes • gas separators and casing • surface installations • gas drainage plan including building • valves • hoses • water pumps • flame and lightening arresters • power supply to bore holes • cleaning equipment • air compressors • electricity and water services • pressure gauges • hydration plants
Alarm systems and action plans may include those for gas concentration / make, combustion indicators, condition monitoring for fans (vibration / temperature / current failures), ventilation devices, monitoring hardware and temperature alarms.	
Maintenance of the gas drainage system may include inspection, servicing and repair.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU405A Apply and monitor the outburst management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of the outburst management plan in the coal industry. It includes planning and preparing for the application of the outburst mining management plan, applying and monitoring the outburst mining activities, and applying outburst mining management system maintenance procedures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the application of the outburst mining management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and clarify roles and responsibilities, as specified in the ***outburst mining management plan*** 1.3. Communicate and clarify work group individual responsibilities and tasks in an effective and timely manner 1.4. Identify, obtain and allocate resources required for the application of the ***outburst mining management plan*** 1.5. Identify and satisfy individual training needs through accessing the established outburst mining management training program and systems 1.6. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to outburst mining management procedures
2. Apply and monitor the outburst mining activities	2.1. Interpret and apply procedures covering the relocation, operation and maintenance of the drilling rig 2.2. Interpret, apply and monitor core sampling techniques, procedures and processes 2.3. Interpret and apply environmental monitoring, recording and reporting procedures 2.4. Interpret, apply and monitor ventilation control measures which impact on outburst mining 2.5. Interpret, apply and monitor actions and procedures in response to gas threshold levels 2.6. Confirm, apply, communicate and post permit to mine procedures 2.7. Interpret, apply and monitor procedures covering outburst mining personnel safety measures and techniques 2.8. Inspect equipment protection/defensive requirements and measures to ensure compliance with standards

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	2.9. Contribute to systems audit and review requirements in accordance with the ***outburst mining management plan***
3. Apply outburst mining management system maintenance procedures	3.1. Carry out inspections, repair and maintenance activities in accordance with the ***outburst mining management plan*** 3.2. Record, report and review maintenance activities in accordance with the ***outburst mining management plan***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to apply and monitor the outburst management plan:

- apply legislative, organisation and site requirements and procedures for applying and monitoring the outburst management plan
- access, interpret and apply technical information
- access and interpret archival and historical outburst information related to the mine
- access and interpret design criteria for outburst management systems and devices
- interpret computer spreadsheets and outburst modelling / simulations
- conduct enquiries/investigations and prepare reports
- communicate effectively in the workplace
- access and interpret data from monitoring systems and equipment
- operate hand held monitoring equipment
- interpret outburst training requirement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to apply and monitor the outburst management plan:

- legislative and statutory requirements for mining structures, including mine plans, ventilation, gas monitoring, strata support and safety management plans
- mine planning and design
- the systems of mining, including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage
- stress analysis, including mining induced stress and topography
- sedimentology, including subsidence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, caving characteristics, windblast, outburst, gas content and over and underlying strata
- systems of work, including bord and pillar, place changing, longwall, highwall, auger mining, pillar extension, partial extension and punch mining
- mining structure failure modes
- exploration techniques
- geology, lithology and strata gas characteristics
- mining and general engineering principles relevant to the behaviour of excavations in rock
- ground support systems

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- audit methodologies
- geotechnical engineering
- excavation engineering
- tunnel engineering and shaft sinking
- rock mechanics
- mine surveying
- mining of coal deposits
- thermodynamics
- the impact of differing geological features and conditions on outburst, including faults, dykes, intrusions and strata deformities
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection
- de-gassing; methods of control, including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders
- fixed monitoring systems types, uses/limitations, design criteria, specifications and design processes
- portable monitoring equipment, types, uses/limitations
- computer-based systems for outburst analysis
- mine outburst management plan development requirements and processes
- processes and techniques for determining alarms and trigger points/levels
- audit and review processes and techniques
- emergency response and disaster planning processes and techniques
- the effects of coal seam characteristics on outburst
- methods of control of outburst
- outburst indicators and ratios
- risk management procedures
- applicable mine rescue procedures
- roles and responsibilities in accordance with outburst mining management plan

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application and monitoring of the outburst management plan • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the application and monitoring of the outburst management plan • working with others to plan, prepare and conduct the application and monitoring of the outburst management plan • evidence of the consistent successful application and monitoring of the outburst management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application and monitoring of the outburst management plan
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the application and monitoring of the outburst management plan

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Outburst mining management plans establish procedures for maintaining a safe environment including:	• hazard identification and quantification • risk assessment • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review
Actions (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.	
Audit is the validation process to ensure the system, procedures, processes meet the established objectives and are implemented.	
Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood* (definition from AS/NZS 4360:1999 Risk Management).	
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition	

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from AS/NZS 4360:1999 Risk Management).	
Principles of mine design include:	• recovery • reserve optimisation • mining direction • geological structures • ventilation • strata control • mining method • productivity • environmental considerations • access
Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.	
Hazards may include:	• irrespirable atmosphere • noxious atmospheres • flammable or explosive mixtures • induced outburst
Geological and hydrogeological information includes that related to, but not limited to:	• subsidence • roof and floor technical data • gas content and composition • over and underlying strata • water-bearing strata • permeability of seam and strata • physical properties • caving characteristics • outburst and stress waves • faults • intrusions and deformities
Geological and physical conditions of the seam and surrounding strata which may contribute to outburst potential may include:	• cutters • changing cleat • coal colour • free gas into atmosphere and mylonite
Mine site historical information may include:	• sedimentology aspects of the mine site relating to subsidence • outburst • gas content and composition

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	• roof and floor technical data • over and underlying strata • water bearing strata • permeability of seam and strata • hydrology • physical property testing results • caving characteristics and ground stress behaviour
Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.	
Mine gases may include CO or methane in addition to normal atmosphere gases.	
Ventilation structures may include:	• stoppings • overcasts • regulators • preparation seals • fire doors • bulk heads • goaf seals • final seals • pressure chambers
Geological conditions may include:	• faults • dykes • intrusions and strata deformities • existing or induced stress or strain
Coal seam characteristics may include inherent factors such as:	• rank • petrology • moisture • particle size • seam gas • pyrites ***Or depositional factors such as***: • seam thickness • multi seams • seam dip • depth of cover

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	• cleat • friability • intrusions
Mine atmosphere monitoring may include:	• continuous monitoring • portable (hand held) monitoring • collection of bag samples • gas chromatography • ventilation measurements from all areas of the mine, including sealed area and waste workings
Defects to mine structures may include:	• deterioration of materials • quality of construction • effects of surrounding strata • physical damage • water damage
Infrastructure includes:	• pipes • valves • hoses • pumps • drainage plant • flame arresters • power supply to bore holes • cleaning equipment • all other plant and equipment

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU406A Apply and monitor the inrush management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of the inrush management plan in the coal industry. It includes planning and preparing for the application of the inrush management plan, applying and monitoring inrush activities, and applying inrush prevention system maintenance procedures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the application of the inrush management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and clarify roles and responsibilities, as specified in the ***inrush management plan*** 1.3. Communicate and explain work group individual responsibilities and tasks in an effective and timely manner 1.4. Identify, obtain and allocate resources required for the application of the ***inrush management plan*** 1.5. Determine individual training needs
2. Apply and monitor inrush activities	2.1. Identify, ***interpret*** and apply ***inrush monitoring***, recording and reporting procedures 2.2. Interpret, apply and monitor control measures which impact on ***inrush control zones*** and methods 2.3. Interpret, apply and monitor ***actions*** and procedures in response to potential ***inrush*** 2.4. Confirm, apply, communicate and post permit-to-mine procedures in accordance with the inrush management plan 2.5. Apply and monitor procedures covering inrush ***personnel safety measures*** and techniques in accordance with the inrush management plan 2.6. Inspect equipment protection/defensive requirements and measures in accordance with the inrush management plan 2.7. Participate in systems ***audit*** and review requirements in accordance with the ***inrush management plan***
3. Apply inrush prevention system maintenance procedures	3.1. Carry out inspections, repair and maintenance activities in accordance with the ***inrush management plan*** 3.2. Record, report and review maintenance activities in accordance with the ***inrush management plan***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to apply and monitor the inrush management plan:

- apply legislative, organisation and site requirements and procedures for applying and monitoring the inrush management plan
- access, interpret and apply technical information
- access and interpret archival and historical inrush information related to the mine
- access and interpret design criteria for inrush prevention/management systems and devices
- interpret computer spreadsheets and inrush modelling/simulations
- conduct enquiries/investigations and prepare reports
- communicate effectively in the workplace
- access and interpret data from monitoring systems and equipment
- operate hand held monitoring equipment
- interpret inrush training requirement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to apply and monitor the inrush management plan:

- legislative and site requirements for mining structures, including mine plans, ventilation, gas monitoring, strata support and safety management plans
- mine planning and design
- the systems of mining, including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage
- stress analysis, including mining induced stress and topography
- sedimentology, including subsidence, water bearing strata, permeability of seam and strata, hydrology, hydrogeology, physical property testing, caving characteristics, over and underlying strata
- systems of work including, bord and pillar, place changing, longwall, highwall, auger mining, pillar extension, partial extension and punch mining
- inrush control zones
- mining structure failure modes
- mining and general engineering principles relevant to the behaviour of excavations in rock
- ground support systems

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- audit methodologies
- geotechnical engineering
- excavation engineering
- tunnel engineering and shaft sinking
- rock mechanics
- mine surveying
- mining of coal deposits
- thermodynamics
- the impact of differing geological features and conditions on potential inrush, including faults, dykes, intrusions and strata deformities
- fixed monitoring systems types, uses / limitations, design criteria, specifications and design processes
- portable monitoring equipment, types, uses/limitations
- inrush management plan development requirements and processes
- processes and techniques for determining alarms and trigger points/levels
- audit and review processes and techniques
- emergency response and disaster planning processes and techniques
- the effects of coal seam characteristics on inrushes
- methods of control of inrush
- risk management procedures
- applicable mine rescue procedures
- roles and responsibilities in accordance with the inrush management plan

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying and monitoring the inrush management plan • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of inrush management plan application and monitoring • working with others to plan, prepare and conduct the application and monitoring of the inrush management plan • evidence of the consistent successful application and monitoring of the inrush management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application and monitoring of the inrush management plan
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the application and monitoring of the inrush management plan

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Interpret is defined as: the understanding needed by the person within their job role.	
Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood* (definition from AS/NZS 4360:1999 Risk Management).	
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management).	
Mine site historical information may include:	• sedimentology aspects of the mine site relating to subsidence • previous inrushes • gas content and composition • roof and floor technical data • over and underlying strata • water bearing strata • permeability of seam and strata • hydrology • physical property testing results • caving characteristics

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	• ground stress behaviour • mine plans
Inrush may be defined as:	• water or other fluid material, or any material that flows when wet; or • flammable or noxious gas • which may put the mine or persons at the mine at risk
Inrush control zones are those areas of heightened awareness, necessitating specialised mining, monitoring and assessment techniques e.g. protective drilling.	
Inrush controls may include, but are not limited to:	• controls that eliminate the hazard by removing the damaging energy, e.g. drainage including pumping and ventilation • controls that reduce the magnitude of the hazard (less water, less pressure etc), e.g. drainage, including pumping and ventilation • controls that reduce the likelihood of the event through engineering or hard barriers, e.g. seals • controls that reduce the likelihood of the event through procedural or soft barriers, e.g. establishment of inrush control zones, protective drilling • controls that reduce the likelihood of the event through warnings, e.g. action levels associated with increased water make
Systems of work may include:	• drilling operations • bord and pillar • place changing • long wall • high wall • auger mining • pillar extraction • partial extraction • punch mining • shaft sinking and drifting
Geological and physical conditions may include:	• rank • petrology • moisture • particle size • seam gas • pyrites

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	• seam thickness • multi seams • seam dip • depth of cover • cleat • friability • intrusions
Monitoring systems may include, but are not limited to:	• continuous and/or periodic monitoring • portable (hand held) monitoring • core samples • visual observation • geological mapping • borehole pressure readings
Inrush hazards and **potential sources** may include, but are not limited to:	• subsidence or failure of barriers and dam walls • strata failure • gas content and composition • abnormal rainfall events • over and underlying strata • water bearing strata • any peat, moss, sand, gravel, silt, or other material that flows when wet which may exist on or near a mine • any coal peat, moss, sand, gravel, silt, or other material that may flow from a bin or storage facility/structure • permeability of seam and strata • physical properties • caving characteristics • faults • intrusions • surface sources • tidal waters • oceans • surface creeks, rivers, ponds, lakes • surface impoundments or reservoirs • abandoned mines • workings of adjacent current mines • existing workings of the mine • other non-mining underground openings • shafts • wells • pipelines

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	• tunnels
Personnel safety measures may include, but are not limited to:	• remote control mining • limitation of numbers • training • physical barriers e.g. drilling through stuffing box • emergency equipment e.g. oxygen self rescuers • personal protective equipment (PPE)
Legislative, **and site requirements** may include:	• legislation and regulations • relevant Australian standards • management plans • manager's rules • OHS policy • code of practice • dams safety committee publications • manufacturer's instructions • safe working or job procedures (or equivalent)
Inrush management system establish criteria and procedures for maintaining a safe environment, including:	• hazard identification and quantification • risk assessment • authority and responsibility • controls established to managed identified risks • reporting and communication requirements • document control • audit and review • procedures for mine inrush monitoring • mine plan • action plans • response plans • emergency procedures • individual group responsibilities • training and education procedures
Inrush prevention system*must be established in accordance with the NSW Coal Mines* (Underground) Regulation 1999 - Division 8, Clause 40 Implementation of an inrush prevention system.	
Audit is defined as: *a systematic examination against defined criteria to determine whether*	

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activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives (AS/NZS 4804: 2001).	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU407A Apply and monitor the strata management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of the strata management plan in the coal industry. It includes planning and preparing for the application of the strata management plan, applying the strata management plan, and applying monitoring and maintenance procedures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the application of the strata management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Communicate and explain work group and individual roles, responsibilities and tasks 1.3. Identify obtain and allocate ***resources*** required for the application of the strata management plan 1.4. Identify individual training needs. 1.5. Identify and ***interpret*** the ***risks*** associated with unstable ***mining structures***
2. Apply the strata management plan	2.1. Communicate, apply and monitor site mining system in accordance with the strata management plan 2.2. Communicate and apply primary, secondary and other support systems in accordance with the strata management plan 2.3. Identify and assess the impact of mining on the stability of ***mining structures*** in accordance with the strata management plan 2.4. Install, monitor and assess strata support systems 2.5. Install, monitor and assess ***strata monitoring devices*** 2.6. Identify and assess strata supports and failure mechanisms and apply ***appropriate controls*** 2.7. Apply, monitor and record mining sequences in accordance with the strata management plan 2.8. Identify and assess and record ***stress*** changes in the mining structure 2.9. Identify, assess and record geological structures encountered during the mining process 2.10. Apply action response plans in accordance with site requirements 2.11. Apply and monitor site procedures relating to strata management 2.12. Participate in ***audit*** and review

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	requirements in accordance with the strata management plan
3. Apply monitoring and maintenance procedures	3.1. Carry out inspection to ensure that repair and maintenance activities are conducted in accordance with strata management plan 3.2. Record, report and review maintenance and monitoring requirements and activities in accordance with strata management plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to apply and monitor the strata management plan:

- apply legislative, organisation and site requirements and procedures for applying and monitoring the strata management plan
- access, interpret and apply technical information
- access and analyse historical strata management information related to the mine and failure mode of mine structures
- interpret and apply design criteria for strata management
- communicate effectively in the workplace
- apply operational procedures relating to strata management
- conduct and report on audits
- identify and evaluate fundamental geological and geotechnical information

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to apply and monitor the strata management plan:

- legislative and site requirements for mining structures, including mine plans, ventilation, gas monitoring, strata support and safety management plans
- the systems of underground mining, including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage
- stress, including mining induced stress, vertical and horizontal stress, tectonics, virgin stress, topographical features
- sedimentology, including subsidence, water bearing strata, permeability of seam and strata, hydrology, rock property testing, caving characteristics, windblast, faults, dykes, outburst, gas content and over and underlying strata
- systems of work, including bord and pillar, place changing, longwall, highwall, auger mining, pillar extraction, partial extension and punch mining
- mining structure failure modes
- exploration techniques
- geology and strata gas characteristics
- strata support and monitoring systems
- audit methodologies
- historical information
- training systems

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- emergency response and evacuation planning processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying and monitoring the strata management plan • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of strata management plan application and monitoring • working with others to plan, prepare and conduct strata management plan application and monitoring • evidence of the consistent successful strata management plan application and monitoring
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the strata management plan application and monitoring
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the strata management plan application and monitoring

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Interpret is defined as: the understanding needed by the person within their job role.	
Resources may include, but are not limited to:	• skilled personnel • roof and rib supports • face equipment • power water/gas drainage systems • strata monitoring devices
Risk is defined as: "*the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood*" (definition from AS/NZS 4360:1999 Risk Management).	
Mining structure can be defined as:	• excavation • pillars • roadways • workings • roof, rib and floor
Strata monitoring devices may include:	• convergence indicators • extensometers • load cells • stress cells
Factors affecting stability of	• roadway size • pillar sizes

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mining structures may include:	• depth of cover • strength of coal and underlying/overlying strata • stress regimes • strata characteristics • longwall chocks • presence of water • systems of mining • breaker line supports • direction of mining • sequence of pillar extraction • primary and secondary support • geological structures • speed and continuity of extraction
Appropriate controls may include:	• restriction of access • setting of temporary and remedial supports • monitoring and reporting
Stress includes, but is not limited to:	• horizontal and vertical tectonic induced stress • mining induced stress • topographical features • virgin stress environment
Audit is defined as: *a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives* (AS/NZS 4804: 2001).	
Mine design is the process of engineering analysis applied to the systems and sequences involved in mining.	
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management).	
Standard operating procedures (SOP) are also known as safe	

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working procedures, safe operating procedures and standard working procedures.	
Mining systems and **methods** may include, but are not limited to:	• bord and pillar • longwall • highwall • place changing • auger mining • pillar extraction • partial extraction • punch mining
Geological and hydrogeological information may be related, but not limited to:	• subsidence • roof and floor technical data • gas content • over and underlying strata • water bearing strata • permeability of seam and strata • physical properties • caving characteristics • outburst • windblast • faults • intrusions
Mine site historical information may include, but is not limited to:	• existence of previous workings within the work seam or other seam • sedimentology aspects of the mine site relating to subsidence • outburst • gas content/gas composition • roof and floor technical data • over and underlying strata • water bearing strata • permeability of seam and strata • hydrology • rock property testing results • caving characteristics • windblast
Mine design may include in whole or in part requirements relating to:	• mine plant • mining induced stress • ventilation • tunnels

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	• sequencing drivages • stone drivage • shaft sinking • pillar extraction • partial extraction • punch mining • modelling • seam grades • windblast • outburst • geology • gas drainage • multi-seams • fault drivage • spontaneous combustion • roof and floor technical data • over and underlying strata • subsidence • legislative requirements
Coal seam characteristics may include, but are not limited to:	• moisture • cleat • coal hardness • seam gas • friability • pyrites ***Or depositional factors such as***: • seam thickness • multiple and rider seams • seam dip • depth of cover

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMCU408A Apply the spontaneous combustion management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application of the spontaneous combustion management plan in the coal industry. It includes identifying and explaining the fundamentals of spontaneous combustions hazards and risks, identifying and explaining the fundamentals of spontaneous combustion control systems and procedures, identifying and applying resources to the spontaneous combustion management plan, indentifying and responding to spontaneous combustion indicators, applying mine atmosphere monitoring systems and procedures, and applying control measures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and explain the fundamentals of spontaneous combustion hazards and risks	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify the fundamentals of spontaneous combustion. 1.3. Identify and explain the effects of ***mine gases*** and barometric variations on the risks of spontaneous combustion 1.4. Identify and explain the ***hazards*** associated with goaf and waste working atmosphere 1.5. Identify the impact of ventilation and ***ventilation structures*** on the risks of spontaneous combustion 1.6. Identify spontaneous combustion risks associated with the coal stowage
2. Identify and explain the fundamentals of spontaneous combustion control systems and procedures	2.1. Identify the principles of ventilation design and related procedures and their impact on spontaneous combustion management 2.2. Identify the methods and purposes of natural and induced ***inertisation*** in the goaf and waste workings, in relation to spontaneous combustion 2.3. Identify the method, purpose, operation and procedures for installation of ***mine atmosphere monitoring systems***, with regards to spontaneous combustion
3. Identify and apply ***resources*** to the spontaneous combustion management plan	3.1. Identify, access, ***interpret*** and apply relevant legislative requirements and site safety management systems including statutory inspection requirements related to spontaneous combustion 3.2. Identify, ***interpret*** and apply procedures and responsibilities in the ***spontaneous combustion management plan*** 3.3. Monitor the actions of the ***work group*** to ensure the application of required spontaneous combustion procedures are complied with 3.4. Identify and apply appropriate response procedures in situations where ***trigger levels*** are reached 3.5. Participate in the development, review and

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	enhancement of spontaneous combustion procedures as per site requirements
4. Identify and respond to spontaneous combustion indicators	4.1. Identify, monitor, investigate, respond and ***report*** on ***spontaneous combustion indicators*** 4.2. Respond to indicators in accordance with site procedures
5. Apply mine atmosphere monitoring systems and procedures	5.1. Conduct ***mine atmosphere monitoring***, ***interpret*** the results and prepare and process ***reports*** in accordance with site procedures 5.2. Identify and report defects to monitoring systems and, where appropriate, affect repairs in accordance with site procedures
6. Apply control measures	6.1. Identify, investigate and ***report*** changes in ventilation which may affect spontaneous combustion 6.2. Report incidents of connection to other workings and take immediate action according to site procedures 6.3. Select, apply and report on the appropriate action to remedy impact of water accumulation on the ventilation system 6.4. Identify, rectify and report defects to ventilation structures and seals 6.5. Identify hazards associated with the coal accumulations and ***transport systems*** and apply action to minimise the spontaneous combustion risks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to apply the spontaneous combustion management plan:

- apply legislative, organisation and site requirements and procedures for the application of the spontaneous combustion management plan
- access, interpret, apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefing and handover details
- plan and coordinate work
- interpret and respond to spontaneous combustion indicators and ratios
- conduct inspections related to spontaneous combustion
- interpret and record data related to spontaneous combustion
- identify workgroup training needs related to spontaneous combustion management plans
- identify and investigate incidents and potential hazards associated with spontaneous combustion
- apply spontaneous combustion control procedures or methods
- conduct mine atmosphere monitoring

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to apply the spontaneous combustion management plan:

- spontaneous combustion management plan requirements
- fundamental knowledge of spontaneous combustion causes and hazards
- fundamental knowledge of methods of control of spontaneous combustion
- mine gases
- legislative, site requirements and instructions
- spontaneous combustion indicators and trigger points
- fundamentals of mine design and plan relating to spontaneous combustion
- basic knowledge of coal seam characteristics, depositional factors and geological conditions on spontaneous combustion
- basic types of environmental monitoring systems

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- mine and goaf ventilation systems
- sealing procedures
- hazard assessment procedures
- site inspection requirements
- site reporting procedures
- training systems
- emergency response and evacuation planning processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application of the spontaneous combustion management plan • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the application of the spontaneous combustion management plan • working with others to plan, prepare and conduct the application of the spontaneous combustion management plan • evidence of the consistent successful application of the spontaneous combustion management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application of the spontaneous combustion management plan
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the application of the spontaneous combustion management plan

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Interpret is defined as: the understanding needed by the person within their job role	

Fundamentals of spontaneous combustion may include:	• coal seam characteristics such as:
	  • rank
	  • moisture content
	  • particle size
	  • seam gas
	  • pyrites
	• depositional factors such as:
	  • seam thickness
	  • multi seams
	  • seam dip
	  • depth of cover
	• geological conditions may include:
	  • faults
	  • dykes
	  • intrusions
	  • strata deformities

Mine gases may include seam gases such as methane, carbon dioxide and hydrogen sulphide in addition to normal atmosphere gases or other gases,, which are produced from processes such as heating, goafs or released from	

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strata:	
Hazards may include:	• irrespirable atmosphere • noxious atmosphere • flammable atmosphere • explosive mixtures
Inertisation may be defined as the displacing or reducing of oxygen to a level that will not support combustion. It may be either a natural process using seam gases or a process of introducing incombustible gases.	• CO make • Graham's ratio • other ratios as determined suitable
Mine atmosphere monitoring may include:	• continuous monitoring • portable (hand) monitoring • collection of bag samples • gas chromatography • ventilation measurements from all areas of the mine including sealed areas • waste workings monitoring
Spontaneous combustion management plan may include procedures for:	• mine atmosphere monitoring • reporting requirements • auditing • ventilation systems and usage • inertisation techniques • mine plan • action plans • response plans • emergency procedures • individual group responsibilities • training and education procedures
Trigger level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.	
Spontaneous combustion indicators may include:	• smoke • haze • sweating • smell • heat • production of carbon monoxide • hydrogen

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	• carbon dioxide • methane • higher hydrocarbons • Or use of indicator ratios such as: • CO make • Graham's ratio • other ratios included in the site safety management system
Ventilation structures and seals may include:	• stoppings • overcasts • regulators • preparation seals / fire doors • bulkheads • goaf seals • final seals • pressure chambers
Defects to ventilation structures may include:	• deterioration of materials • quality of construction • effects of surrounding strata • physical damage • water damage
Reports may be:	• verbal • written reports • electronic information • other work instructions
Transport systems may include:	• bins • conveyors • transfer points • bunkers

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMCU501A Implement the spontaneous combustion management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of spontaneous combustion management plans in the coal industry. It includes identifying and applying resources to the spontaneous combustion management plan, implementing mine atmosphere monitoring measures, monitoring and responding to spontaneous combustion indicators, implementing spontaneous combustion control measures, and auditing spontaneous combustion control measures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and apply resources to the spontaneous combustion management plan	1.1. Access, ***interpret*** and apply ***compliance documentation*** relevant to the work activity 1.2. Identify the risks and hazards associated with spontaneous combustion 1.3. Identify and implement appropriate response procedures in situations where trigger levels are reached 1.4. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to spontaneous combustion procedures 1.5. Implement the program to satisfy identified spontaneous combustion management plan training requirements
2. Implement mine atmosphere monitoring measures	2.1. Implement procedures for installation, operation and maintenance of monitoring systems 2.2. Implement systems and procedures for the collection of ***mine gas*** samples
3. Monitor and respond to spontaneous combustion indicators	3.1. Implement the system for identification of and inspections for spontaneous combustion indicators 3.2. Monitor ***sensory spontaneous combustion indicators*** analyse and investigate variations and implement appropriate corrective action and record and process reports in accordance with the plan 3.3. Monitor ***gaseous spontaneous combustion indicators*** analyse and investigate variations and implement appropriate corrective action and record and process reports in accordance with the plan 3.4. Implement emergency and evacuation procedures in accordance with the ***safety management system***
4. Implement spontaneous combustion control measures	4.1. Implement ventilation control measures in accordance with the spontaneous combustion management plan 4.2. Implement ventilation monitoring systems and surveys to assess the status of the systems

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	4.3. Incorporate into the development of the system water management measures to minimise the risk of spontaneous combustion 4.4. Implement ***inertisation*** as required and in accordance with the established plan 4.5. Implement ***response actions*** and review effectiveness and currency 4.6. Implement systems to prevent and/or respond immediately to the intersection of current and other workings
5. Audit spontaneous combustion control measures	5.1. Audit the effectiveness of ***control measures*** and amend the procedures/measures as required

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to implement the spontaneous combustion management plan:

- apply legislative, organisation and site requirements and procedures for implementing the spontaneous combustion management plan
- access, interpret and apply:
  - technical information
  - site / legislative requirements
  - records and reports
  - briefings and handover details
- prepare technical reports
- apply the principles of mine design
- assess the risks and consequences of spontaneous combustion
- develop procedures appropriate to mine operations for management of spontaneous combustion
- inspect, monitor, analyse and record data related to the management of spontaneous combustion
- plan and coordinate work
- identify training needs related to spontaneous combustion

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to implement the spontaneous combustion management plan:

- causes and effects of spontaneous combustion
- the effects of coal seam characteristics, depositional factors and geological conditions on spontaneous combustion
- legislative and site requirements and instructions
- mine operation procedures
- geological data
- strata control
- mine design and plan relating to spontaneous combustion
- spontaneous combustion management plan requirements
- methods of control of spontaneous combustion
- principles of ventilation management

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- gas management
- mine and goaf ventilation systems
- mine gases
- inertisation principles and techniques
- underground water management
- sealing design
- spontaneous combustion indicators and ratios
- spontaneous combustion risks and hazards
- environmental monitoring requirements
- risk management procedures
- site inspection requirements
- mine reporting procedures
- emergency and evacuation procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation of the spontaneous combustion management plan • implementation of procedures and techniques for the safe, effective and efficient implementation of the spontaneous combustion management plan • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of spontaneous combustion management plan elements that best meet the required outcomes • working with other to undertake and complete the implementation of the spontaneous combustion management plan • consistent successful implementation of the spontaneous combustion management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of the spontaneous combustion management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of spontaneous combustion management plan elements that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and

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	complete the implementation of the spontaneous combustion management plan • provision of clear and timely required support and advice on the implementation of the spontaneous combustion management plan
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Interpret is defined as: the understanding needed by the person within their job role:	
Spontaneous combustion management plan may include procedures for:	• mine atmosphere monitoring • reporting requirements • auditing • ventilation systems and usage • inertisation techniques • mine plan • action plans • response plans • emergency procedures • individual group responsibilities • training and education procedures
Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs / gobs in the mine.	
Sensory spontaneous combustion indicators may include:	• smoke • haze • sweating • smell • heat
Gaseous spontaneous combustion indicators may	• carbon monoxide • hydrogen

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include reduced oxygen levels and/or increased production of:	• methane
	• higher hydrocarbons
	• Or the use of indicator ratios such as:
	  • CO make
	  • Graham's ratio
	  • Tricketts
	  • Morris' Oxides of Carbon ratio
	• other ratios included in the site safety management system

Control measures may include:	• coal stowage and transport procedures • procedures for responding to changes in atmosphere • mine atmosphere monitoring systems • procedures relating to the status of the ventilation system • sealing procedures • goaf monitoring systems • goaf sampling systems • spontaneous combustion inspection system
Inertisation may be defined as the displacing or reducing of oxygen to a level that will not support combustion. It may be either a natural process using seam gases or a process of introducing incombustible gases.	
Audit is defined as: *a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives* (AS/NZS 4804: 2001).	
Action (**alarm or trigger**) **level** is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.	
Principles of mine design	• recovery

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include:	• reserve optimisation • mining direction • geological structures • ventilation • strata control • mining method • productivity • environmental considerations and access • depth of cover • location of adjacent seams/workings
Hazards may include:	• irrespirable atmosphere • noxious atmosphere • flammable atmosphere • explosive mixtures • heatings • fires
Mine gases may include:	• seam gases • methane • carbon dioxide • oxides of nitrogen • hydrogen • carbon monoxide • sulphur dioxide • hydrogen sulphide • hydrocarbons • contaminations • normal atmosphere gases
Ventilation structures may include:	• stoppings • overcasts • regulators • preparation seals • fire doors • bulk heads • goaf seals • final seals • pressure chambers
Geological conditions may include:	• faults • dykes • intrusions • strata deformities
Coal seam characteristics may	• rank

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include inherent factors such as:	• petrology • moisture content • particle size • seam gas • pyrites Or depositional factors such as: • seam thickness • multi seams • seam dip • depth of cover
Mine atmosphere monitoring may include:	• continuous monitoring • portable (hand held) monitoring • collection of bag samples • gas chromatography • ventilation measurements, including differential pressure across stoppings • seals and solid coal (intake to return) from all areas of the mine, including sealed areas • waste workings monitoring
Defects to ventilation structures may include:	• deterioration of materials • quality of construction • effects of surrounding strata • physical damage • water damage
Response actions for mitigation of spontaneous combustion may include:	• quenching • grouting • smothering • excavating • ventilation control by pressure balancing • sealing • inertisation

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMCU502A Implement the gas management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of the gas management plan in the coal industry. It includes planning and preparing for the implementation of the gas management plan, implementing mine gas monitoring measures, implementing ventilation/gas control measures, and auditing gas management systems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the implementation of the gas management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, ***interpret*** and clarify the legislative and site requirements related to gas management systems 1.3. Access, ***interpret*** and clarify the ***gas management plan*** 1.4. Identify and communicate roles and responsibilities, as specified in the ***gas management plan*** to all involved persons 1.5. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the ***gas management plan*** 1.6. Identify training needs 1.7. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to ***gas management procedures***
2. Implement mine gas monitoring measures	2.1. Identify, measure and ***interpret*** the impact of changes in composition, the concentration of gas and ***gas make***, and associated ***hazards*** on the ***mine atmosphere*** 2.2. Implement procedures for the installation, operation and maintenance of gas monitoring systems 2.3. Implement systems and procedures for the collection and analysis of gas samples 2.4. Record and report monitoring system data in accordance with the ***gas management plan*** 2.5. Investigate changes in ***mine atmosphere*** status and implement appropriate corrective action and record and process reports
3. Implement ventilation/gas control measures	3.1. Monitor ***mine factors*** and ***action*** in accordance with the ***gas management plan*** 3.2. Implement gas ***hazard*** control procedures associated with gas drainage, ***outburst mining conditions*** and the ***gas management plan*** 3.3. Identify and implement appropriate

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	response procedures in situations where trigger levels are reached 3.4. Implement ventilation and gas monitoring systems and surveys to assess the status of the systems 3.5. Implement procedures covering the relocation, operation and maintenance of drilling rigs and gas drainage ***infrastructure*** according to site requirements 3.6. Implement systems to prevent and/or respond immediately to the intersection of current and other workings 3.7. Implement gas emergency and evacuation procedures in accordance with the Mine Safety Management System 3.8. Implement the gas management training plan
4. Audit gas management systems	4.1. Review the effectiveness of the gas management systems in accordance with the requirements of the ***gas management plan*** 4.2. ***Audit*** mine gas monitoring systems operations for compliance with legislative requirements and the ***gas management plan*** 4.3. ***Audit*** mine gas control devices for compliance with legislative and mine site requirements 4.4. ***Audit*** recording systems for compliance with the ***gas management plan*** 4.5. ***Audit*** the maintenance program and procedures for compliance with the ***gas management plan*** 4.6. ***Audit*** gas emergency and evacuation procedures for compliance with the mine safety management system 4.7. ***Audit*** the ***gas management training*** plan for currency, relevance and compliance with the ***gas management plan***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to implement the gas management plan:

- apply legislative, organisation and site requirements and procedures for implementing the gas management plan
- access, interpret and apply technical information
- access and analyse gas information related to the mine including archival and historical information
- interpret and apply mathematical and scientific theorems / laws related to gas
- collect, collate and evaluate gas management data
- conduct investigation and prepare reports
- communicate effectively in the workplace
- access, evaluate and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- implement gas management training requirements, programs, systems and procedures
- apply risk management processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to implement the gas management plan:

- legislative and site requirements for gas management including air quality and quantity, maximum and minimum values, control and distribution, flammable gas limits, ventilation fans, gas monitoring, inspections and recording / reporting
- the methods of mine ventilation and their applications / limitations including exhaust / force, antitropal, homotropal, flank returns, ascensional / decensional, bleeder, Z/U/Y systems and other combinations
- the methods of panel gas management and their applications / limitations including homotropal and antitropal (and in conjunction with these, the use of goaf bleed or back return), auxiliary fans, coursed ventilation (narrow side / wide side), machine mounted scrubber systems, compressed air venturis and bleeders
- the impact of mining techniques
- the impact of mine and panel design on gas management
- the impact of differing geological features and conditions on gas management including faults, dykes, intrusions and strata deformities

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- the impact of coal characteristics and coal seam gradients on mine gas management systems
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection
- mine fires; the types and possible impacts on gas management
- mine explosions; the types, ignition sources and possible impacts on gas management
- pressure changes; causes and the impacts on gas management
- heat / humidity; the sources and factors which may impact on mine gas management
- mine fans; fan types, applications and limitations
- gas control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders
- fixed gas monitoring systems types, uses and limitations
- portable monitoring equipment, types, characteristics, uses and limitations
- computer-based systems for mine gas analysis
- Gas Management Plan development requirements and processes
- techniques for determining alarms and trigger points / levels
- audit and review processes and techniques
- site document control requirements
- emergency response and evacuation procedures
- the general use and application of ventilation theory including
  - gas laws including Charles and Boyle
  - natural ventilation
  - Coward's Triangle
  - Graham's Ratio
  - Ellicott Diagram
  - gas make
  - Trickett's Ratio
  - leakage
  - psychrometry and heat
  - CO/CO2
  - Kirchoff's laws
- geological data
- the impact of differing geological features and conditions on outburst including faults, dykes, intrusions and strata deformities
- methods of control of outburst
- the methods of gas drainage and their applications / limitations against the mine design, mine and panel ventilation systems, systems of mining and current and future mine development

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- the impacts of gas drainage on dust generation during mining
- impacts of intersecting and intersected holes and hole design
- principles of ventilation management
- mine and goaf ventilation systems
- underground water management techniques
- site environmental monitoring requirements
- risk management procedures
- inertisation techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for implementing the gas management plan • implementation of procedures and techniques for the safe, effective and efficient implementation of the gas management plan • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of gas management plan elements that best meet the required outcomes • working with others to undertake and complete the implementation of the gas management plan • consistent successful implementation of the gas management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of the gas management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of gas management plan elements that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate:
	  • working with others to undertake and complete the implementation of the gas management plan

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	• provision of clear and timely required support and advice on the implementation of the gas management plan
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Interpret is defined as: the understanding needed by the person within their job role.	
Gas Management Plans establish procedures for maintaining a safe environment may include:	• hazard identification and quantification • risk assessment • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review ***And may include procedures for***: • mine atmosphere monitoring • ventilation systems and usage • inertisation techniques • mine plan • trigger action response plans • emergency procedures • training and education
Gas management training applies to:	• mine workers • tradespeople • permanent employees • contractors • mine officials • other special requirements
Gas management procedures may include those for:	• construction • action response

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	• permit to work/mine • condition monitoring • auditing • maintenance • atmosphere monitoring • ventilation system control • communication systems • survey procedures • sealing procedures • changes • training and recording/reporting
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management).	
Hazards may include:	• irrespirable atmosphere • noxious atmosphere • flammable or explosive mixtures • outburst
Mine Atmosphere refers to the atmosphere in all areas in the general mine ventilation district and beyond into waste working and goafs / gobs in the mine.	
Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which pre-determined action is initiated or a response made.	
Audit is defined as: *a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives* (AS/NZS 4804: 2001).	

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Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood* (definition from AS/NZS 4360:1999 Risk Management).	
Principles of mine design may include:	• recovery • reserve optimisation • mining direction • geological structures • ventilation • strata control • mining method • productivity • environmental considerations • access
Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.	
Mine gases may include:	• seam gases • methane • carbon dioxide • oxides of nitrogen • hydrogen • carbon monoxide • sulphur dioxide • hydrogen sulphide • hydrocarbons • contaminations • normal atmosphere gases
Gas make characteristics may include:	• gas content • gas pressure • absorption • desorption • hydrostatic pressure • strata moisture content • permeability and porosity

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	• tectonic stress
Gas make characteristics may include:	• stoppings • overcasts • regulators • preparation seals • ventilation doors • bulk heads • goaf seals • final seals • pressure chambers • air locks
Explosion control devices may include:	• water barriers • stone dust barriers • trickle dusters • calcium chloride • stone dust • triggered barriers
Gas management devices and methods may include:	• gas drainage • infusion • scrubbers • automatic gas detectors • tube bundle systems • de-gassing device on auxiliary fans • gas monitoring systems
Geological conditions may include:	• faults • dykes • intrusions and strata deformities • existing or induced stress or strain • depth of overlaying strata • adjacent coal seams
Coal seam characteristics may include inherent factors such as:	• rank • petrology • moisture • particle size • seam gas - composition and content • pyrites • permeability ***Or depositional factors such as***: • seam thickness • multiple and rider seams • seam dip

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	• depth of cover • cleats • friability
Geological and physical conditions of the seam and surrounding strata which may contribute to outburst potential may include:	• cutters • changing cleat • coal colour
Mine atmosphere monitoring may include:	• continuous monitoring • portable (hand held) monitoring • collection of bag samples • gas chromatography • ventilation measurements from all area of the mine including sealed areas • waste workings
Infrastructure may include:	• pipes • valves • hoses • pumps • drainage plant • flame arresters • power supply to bore holes • cleaning equipment
Types of fires may include:	• solid • liquid • gas
Ignition sources may include:	• electrical • static discharge • friction • contraband • spontaneous combustion • naked flame • chemical • explosives
Disruptions / ventilation pressure changes may include those resulting from:	• planned disruptions • changes in barometric pressure • fall of ground causing blockage and/or overpressure causing damage • fan changes/failure • ventilation control device changes/failure • outburst

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	• holing into previous workings • re-circulation • ventilation circuit changes • natural ventilation pressure changes • explosions • changes in ambient temperature/humidity • fires • equipment movement • flooding of roadways • application of inertisation
Effect of re-circulation may include:	• build up of contaminant concentration (gas, fumes, dust, heat) • decrease in oxygen
Criteria for safe mine ventilation may include:	• statutory and regulatory requirements • mine ventilation management plan • measures to reduce and/or control seam gas • introduced gas • fumes and dust • temperature/humidity and maximum/minimum velocity specification • ventilation efficiency
Monitoring devices may include:	• barograph • tube bundle • real time telemetry • portable (hand held) monitoring • bag samples • gas chromatography
Monitoring includes that related to:	• atmospheric pressures • ventilation pressures and quantities • gas quality and quantity • gas composition • temperature • fire • the condition monitoring of ventilation devices
Methods of ventilation may include:	• exhaust/forcing • anistropal (antitropal) • homotropal • flank returns • ascentional/descensional • bleeder • Z/U/Y systems

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	• overlapping systems • other combinations
Alarm systems and action plans may include those for:	• gas concentration/make/ratios • spontaneous combustion (physical and gaseous) • combustion indicators • condition monitoring for fans (vibration/temperature/current/failures) • ventilation devices • monitoring hardware • gas content of the coal seam
Maintenance of the ventilation system may include:	• inspection • servicing • repair

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU503A Implement the gas drainage management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of gas drainage management plans in the coal industry. It includes planning and preparing for the implementation of the gas management plan, implementing the gas drainage management procedures, and implementing systems for the audit and review of gas drainage systems and equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the implementation of the gas management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the gas management plan 1.3. Identify and communicate to the relevant persons roles and responsibilities as specified in the gas management plan 1.4. Identify, forecast, schedule and record resources required for the implementation of the gas management plan 1.5. Identify training needs
2. Implement the gas drainage management procedures	2.1. Implement ***hazard*** control procedures associated with the gas drainage management plan 2.2. Implement the gas monitoring and testing system installation, operation and maintenance procedures in accordance with site requirements 2.3. Implement the gas drainage service installation and recovery procedures 2.4. Implement the gas drainage system maintenance procedures 2.5. Implement the gas drainage management plan training requirements 2.6. Implement ***action*** levels established to minimise the ***hazards*** of gas drainage 2.7. Implement gas drainage management system information recording and reporting procedures
3. Implement systems for audit and review of gas drainage systems and equipment	3.1. ***Audit*** gas drainage monitoring systems in accordance with legislative and site requirements 3.2. ***Audit*** recording and reporting systems in accordance with legislative and site requirements 3.3. Audit gas drainage installation, operation, maintenance and recovery procedures 3.4. ***Audit*** the gas ***drainage management training*** plan for currency, relevance and compliance with the requirements of the

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	gas drainage management plan 3.5. Implement procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by ***audit***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to implement the gas drainage management plan:

- apply legislative, organisation and site requirements and procedures for the implementation of the gas drainage management plan
- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - geological information
  - records and reports
  - briefings and handover details
- apply the principles of mine design
- perform gas drainage planning mathematical calculations
- access, evaluate and apply design criteria for gas drainage systems and devices
- collect, collate and evaluate gas drainage data
- establish technical procedures relating to gas drainage
- conduct enquiries/investigations and prepare reports
- assess the risks and consequences of gas drainage
- develop procedures appropriate to mine operations for management of gas drainage
- plan and coordinate work
- identify training needs related to the gas drainage
- operate hand held monitoring equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to implement the gas drainage management plan:

- legislative and site requirements which may include those for gas drainage drilling, gas drainage installation and recovery, ventilation requirements, return airways gas levels, intake airway gas accumulated levels, gas control and distribution, environmental management, local government requirements, inspections and reporting
- the methods of gas drainage and their applications/limitations against the mine design, mine and panel ventilation systems, systems of mining and current and future mine development
- the impact of gas drainage on mining techniques, mine and panel design and

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production output
- the impact of the strata geology and coal seam characteristics on the gas drainage management plan, including coal seam gradient, moisture content, friability, the porous features of the coal seam, stresses and intrusions
- outburst mining monitoring procedures
- drilling options and related equipment and techniques
- hazard management processes and techniques
- the effects of the type and quantity of gas in the coal seam
- impacts of accumulation of coal dust after gas drainage has been completed
- pressure changes; causes, the impacts on the ventilation system, and the effects on gas drainage
- heat/humidity; the sources and factors which may impact on gas drainage and personnel
- mine fans; fan laws, fan types, performance characteristics, configurations, applications and limitations in association with the gas drainage management plan,
- ventilation control devices; the types, purposes, design criteria and specifications, distribution/placement criteria and limitations in association with the gas drainage management plan,
- ventilation control devices; the types, purposes, design criteria and specifications, distribution/placement criteria and limitations
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles, bleeders and purging
- fixed gas drainage monitoring systems types, characteristics, uses and limitations
- use of computer-based systems for mine environment and gas drainage systems analysis
- Gas Drainage Management Plan development requirements and processes
- gas drainage surveys; the types, frequency and method for conducting including pressure/quantity/temperature and gas
- processes and techniques for determining alarms and trigger points/levels
- audit and review processes and techniques
- site document control requirements
- emergency response and evacuation procedures
- general uses and applications of ventilation theory, including:
  - Atkinson's equation
  - methods of determining frictional resistance
  - gas laws, including Charles and Boyle
  - natural ventilation pressures
  - gas make
  - leakage
  - determination of mine resistance curves
  - regulator and equivalent orifice calculation
  - determination of fan operating/duty points
  - Kirkoff's laws

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- mine operational procedures
- strata control systems and their effects on gas drainage
- mine and goaf ventilation systems
- underground water management principles and systems
- impacts of intersecting and intersected holes and hole design
- site environmental monitoring requirements
- legislative and mine reporting procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for implementing the gas drainage management plan • implementation of procedures and techniques for the safe, effective and efficient implementation of the gas drainage management plan • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of gas drainage management plan elements that best meet the required outcomes • working with others to undertake and complete the implementation of the gas drainage management plan • consistent successful implementation of the gas drainage management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site

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	circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of the gas drainage management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of gas drainage management plan elements that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and

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	complete the implementation of the gas drainage management plan • provision of clear and timely required support and advice on the implementation of the gas drainage management plan
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Interpret is defined as:	• the understanding needed by the person within their job role
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management).	
Hazards may include:	• irrespirable atmosphere • noxious atmosphere • flammable or explosive mixtures • outbursts • induced outburst • gas under pressure • location of drainage pipes • static electricity • damage to pipelines and other infrastructure • spontaneous combustion
Gas drainage system maintenance procedures may include those for:	• construction • action response • permit to work • condition monitoring • auditing • maintenance • document control • atmosphere monitoring • ventilation system control

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	• communication systems • survey procedures • standard operating procedures • changes • training • recording/reporting
Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response is made.	
Audit is defined as: *a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives* (AS/NZS 4804: 2001).	
Gas drainage management plans establish procedures for maintaining a safe environment including:	• hazard identification and qualification • risk assessment • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review
Gas drainage management plan may include procedures for:	• gas drainage drilling program • gas or geological anomaly detection • mine atmosphere monitoring • stimulation techniques • goaf seals • reporting requirements • auditing • ventilation systems and usage • mine plan • action plans • systems of mining • response plans • emergency procedures • individual and group responsibilities

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	• training and education procedures
Gas drainage management training applies to:	• mine workers • tradespeople • permanent employees • contractors • mine officials • other special requirements
Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood* (definition from AS/NZS 4360:1999 Risk Management).	•
Principles of mine design include:	• recovery • reserve optimisation • mining direction • geological structures • ventilation • strata control • mining method • productivity • environmental considerations • access
Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.	
Mine atmosphere refers to the atmosphere in all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.	
Mine gases may be seam gases or gases from introduced sources and may include but not be limited to:	• methane • carbon dioxide • carbon monoxide • oxides of nitrogen • hydrogen • sulphur dioxide • hydrogen sulphide

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	• hydrocarbons • combinations
Ventilation systems may include the use of:	• main mine fan • auxiliary fans • brattice • regulators • seals • stoppings • overcasts • ventilation doors • surface drainage boreholes • pressure chambers
Geological conditions may include:	• faults • dykes • intrusions • strata deformities • induced stresses • depth of overlaying strata • strength of immediate strata • under and over the coal seam • mining lease gas make
Coal seam characteristics may include inherent factors such as:	• rank • petrology • moisture • particle size • seam gas make • pyrites ***Or depositional factors such as***: • seam thickness • multi seams • seam dip • depth of cover • cleats • friability • interaction of other coal seams and gas makes • clay bands within the coal seam and molorite zones
Gas make characteristics may include:	• gas content • gas pressure • absorption • desorption

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	• hydrostatic pressure • strata moisture content • permeability and porosity • tectonic stress
Gas drainage monitoring may include:	• continuous monitoring • leakage monitoring (laser beam technology) • portable (hand held) monitoring • collection of bag samples • pipeflow and pressure measurements • gas chromatography • ventilation measurements from relevant areas
Gas drainage infrastructure may include:	• vacuum pumps • pipes • boreholes and stand pipes • gas separators and casing • surface installations • gas drainage plant including building • valves • hoses • water pumps • flame and lightening arresters • power supply to bore holes • cleaning equipment • air compressors • electricity and water services • pressure gauges • hydration plans
Alarm systems and action plans may include those for:	• gas concentration/make • combustion indicators • condition monitoring for fans (vibration/temperature/current failures) • ventilation devices • monitoring hardware • temperature alarms
Maintenance of the gas drainage system may include:	• inspection • servicing • repair

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Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU504A Implement the outburst management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of outburst management plans in the coal industry. It includes planning and preparing the implementation of the outburst mining management plan, implementing the outburst mining management plan, and auditing and reviewing the effectiveness of the outburst mining management systems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare the implementation of the outburst mining management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify, clarify and communicate roles and responsibilities, as specified in the ***outburst mining management plan*** 1.3. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the ***outburst mining management plan*** 1.4. Implement the program to satisfy identified outburst mining management training requirements 1.5. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to outburst mining management procedures
2. Implement the outburst mining management plan	2.1. Implement outburst drilling and sample collection operational procedures 2.2. Implement core sample analysis and reporting procedures 2.3. Implement ***geological and geotechnical hazard*** identification and response procedures 2.4. Implement ***actions*** and procedures required in response to gas threshold levels 2.5. Implement permit to mine procedures in accordance with the ***outburst mining management plan*** 2.6. Implement procedures to minimise potential damage caused by outburst 2.7. Implement outburst information recording and reporting procedures 2.8. Implement emergency and evacuation plans and procedures 2.9. Implement procedures for the recovery of services following outburst
3. Audit and review the effectiveness of the outburst mining management systems	3.1. ***Audit*** outburst drilling and analytical operational procedures for compliance with statutory and ***outburst mining management plan*** requirements 3.2. ***Audit*** monitoring systems operations for

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	compliance with the ***outburst mining management plan*** 3.3. ***Audit geological and geotechnical*** identification, monitoring and response procedures for compliance with the ***outburst mining management plan*** 3.4. ***Audit*** recording systems for compliance with the ***outburst mining management plan*** 3.5. ***Audit*** procedures developed for the recovery of services following outburst for compliance with current statutory and ***outburst mining management plan requirements*** 3.6. Trial and ***audit*** emergency and evacuation plans and procedures for compliance with the management plan 3.7. ***Audit*** outburst training program for currency, relevance and compliance with the requirements of the outburst management plan 3.8. Respond promptly to instances of non-compliance and other discrepancies/deficiencies revealed by ***audit*** and modify the management plan as necessary 3.9. Identify evaluate and incorporate future outburst management requirements into the outburst mining management planning procedures as stipulated by the ***outburst mining management plan***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to implement the outburst management plan:

- apply legislative, organisation and site requirements and procedures for outburst management plan implementation
- access, interpret and apply technical information
- access and interpret archival and historical outburst information related to the mine
- interpret and apply mathematical and scientific theorems/laws related to outburst
- perform outburst planning mathematical calculations
- access and interpret design criteria for outburst management systems and devices
- interpret computer spreadsheets and outburst modelling/simulations
- conduct enquiries/investigations and prepare reports
- communicate effectively in the workplace
- access and interpret data from monitoring systems and equipment
- operate hand held monitoring equipment
- interpret outburst training requirement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to implement the outburst management plan:

- legislative and statutory requirements for mining structures, including plans, ventilation, gas monitoring, strata support and safety management plans
- mine planning and design
- the systems of mining, including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage
- stress analysis, including mining induced stress and topography
- sedimentology, including subsidence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, caving characteristics, windblast, outburst, gas content and over and underlying strata
- systems of work, including board and pillar, place changing, longwall, highwall, auger mining, pillar extension, partial extension and punch mining
- mining structure failure modes
- exploration techniques
- geology, lithology and strata gas characteristics
- mining and general engineering principles relevant to the behaviour of excavations

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in rock
- ground support systems
- audit methodologies
- geotechnical engineering
- excavation engineering
- tunnel engineering and shaft sinking
- rock mechanics
- mine surveying
- mining of coal deposits
- thermodynamics
- the impact of differing geological features and conditions on outburst, including faults, dykes, intrusions and strata deformities
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection
- de-gassing; methods of control, including brattice, auxiliary, compressed air venturis, sails, hurdles and bleeders
- fixed monitoring systems types, uses/limitations, design criteria, specifications and design processes
- portable monitoring equipment, types, uses/limitations
- the use of simulation techniques and applications relevant to outburst
- computer-based systems for outburst analysis
- outburst mining management plan development requirements and processes
- processes and techniques for determining alarms and trigger points/levels
- audit and review processes and techniques
- emergency response and disaster planning processes and techniques
- the effects of coal seam characteristics on outburst
- methods of control of outburst
- outburst indicators and ratios
- risk management procedures
- applicable mine rescue procedures
- roles and responsibilities in accordance with outburst mining management plan

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for implementing the outburst management plan • implementation of procedures and techniques for the safe, effective and efficient implementation of the outburst management plan • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of outburst management plan elements that best meet the required outcomes • working with others to undertake and complete the implementation of the outburst management plan • consistent successful implementation of the outburst management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of the outburst management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of outburst management plan elements that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and

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	complete the implementation of the outburst management plan • provision of clear and timely required support and advice on the implementation of the outburst management plan
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Outburst mining management plan may include:	• procedures for mine atmosphere monitoring • reporting requirements • auditing • ventilation systems and usage • pre-drilling techniques • initiation techniques • mine plan • action plans • response plans • emergency procedures • individual group responsibilities • training and education procedures
Geological and geotechnical information includes that related to, but is not limited to:	• subsidence • roof and floor technical data • gas content and composition • over and underlying strata • water bearing strata • permeability of seam and strata • physical properties • caving characteristics • outburst and stress waves • faults • intrusions • deformities

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Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management).	
Hazards may include:	• irrespirable atmosphere • noxious atmospheres • flammable or explosive mixtures • induced outburst
Actions (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.	
Audit is defined as: a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives (AS/NZS 4804: 2001).	
Risk is defined as: *the chance of something happening that will have an impact upon objectives*. *It is measured in terms of consequences and likelihood* (definition from AS/NZS 4360:1999 Risk Management).	
Principles of mine design include:	• recovery • reserve optimisation • mining direction • geological structures • ventilation • strata control • mining method • productivity • environmental considerations • access
Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.	
Geological and physical conditions of	• cutters

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the seam and surrounding strata which may contribute to outburst potential may include:	• changing cleat • coal colour • free gas into atmosphere • mylonite
Mine site historical information may include:	• sedimentology aspects of the mine site relating to subsidence • outburst • gas content and composition • roof and floor technical data • over and underlying strata • water bearing strata • permeability of seam and strata • hydrology • physical property testing results • caving characteristics • ground stress behaviour
Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.	
Mine gases may include CO or methane in addition to normal atmosphere gases.	
Ventilation structures may include:	• stoppings • overcasts • regulators • preparation seals • fire doors • bulk heads • goaf seals • final seals • pressure chambers
Geological conditions may include:	• faults • dykes • intrusions and strata deformities • existing or induced stress or strain
Coal seam characteristics may include inherent factors such as:	• rank • petrology • moisture • particle size • seam gas

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	• pyrites ***Or depositional factors such as***: • seam thickness • multi seams • seam dip • depth of cover • cleat • friability • intrusions
Mine atmosphere monitoring may include:	• continuous monitoring • portable (hand held) monitoring • collection of bag samples • gas chromatography • ventilation measurements from all areas of the mine, including sealed areas and waste workings
Defects to mine structures may include:	• deterioration of materials • quality of construction • effects of surrounding strata • physical damage • water damage
Infrastructure includes:	• pipes • valves • hoses • pumps • drainage plant • flame arresters • power supply to bore holes • cleaning equipment • all other plant and equipment

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMCU505A Implement the inrush management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of the inrush management plan in the coal industry. It includes planning and preparing the implementation of the inrush management plan, implementing the inrush management plan, and implanting the systems for the audit and review of the effectiveness of the inrush management systems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare the implementation of the inrush management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and communicate to the relevant persons roles and responsibilities, as specified in the ***inrush management system*** 1.3. Identify, forecast, schedule and record resources required for the implementation of the ***inrush management system*** 1.4. Identify training needs
2. Implement the inrush management plan	2.1. Implement ***inrush hazard*** control procedures in accordance with the ***inrush management system*** 2.2. Implement ***personnel safety measures*** and techniques in accordance with the inrush management system 2.3. Implement ***services and infrastructure*** protection measures in accordance with the inrush management system 2.4. Implement the mine monitoring requirements relating to inrush 2.5. Implement ***inrush*** information recording and reporting procedures 2.6. Implement ***actions*** and procedures required in response to inrush indicators 2.7. Implement permit-to-mine procedures in accordance with the ***inrush management system*** 2.8. Implement emergency response and evacuation plans and procedures
3. Implement the systems for the audit and review of the effectiveness of the inrush management systems	3.1. ***Audit inrush*** management system in accordance with legislative and site requirements 3.2. ***Audit*** recording and reporting systems in accordance with legislative and site requirements 3.3. ***Audit inrush management*** operational procedures in accordance with legislative and site requirements 3.4. ***Audit inrush*** training plan for currency, relevance and compliance with the requirements of the ***inrush management***

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	system 3.5. Implement procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by ***audit***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to implement the inrush management plan:

- apply legislative, organisation and site requirements and procedures for implementing the inrush management plan
- access, interpret and apply technical information
- access and interpret archival and historical inrush information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to inrush
- perform inrush planning mathematical calculations
- access and interpret design criteria for inrush prevention and management systems and devices
- interpret computer spreadsheets and inrush modelling/simulations
- conduct enquiries/investigations and prepare reports
- communicate effectively in the workplace
- access and interpret data from monitoring systems and equipment
- operate hand held monitoring equipment
- interpret inrush training requirement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to implement the inrush management plan:

- legislative and site requirements for mining structures, including mine plans, ventilation, gas monitoring, strata support and safety management plans
- mine planning and design
- the systems of mining including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage
- stress analysis including mining induced stress and topography
- sedimentology subsistence, water bearing strata, permeability of seam and strata, hydrology, hydrogeology, physical property testing, caving characteristics, outburst, over and underlying strata
- systems of work, including bord and pillar, place changing, longwall, highwall, auger mining, pillar extraction, partial extraction and punch mining
- mining structure failure modes
- mining and general engineering principles relevant to the behaviour of excavations in rock and coal

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- audit methodologies
- site document control requirements
- mine mapping of inrush zones, related geology and features
- the impact of differing geological features and conditions on inrush zones, including faults, dykes, intrusions and strata deformities
- fixed monitoring systems types, uses/limitations, design criteria, specifications and design processes
- portable monitoring equipment, types, uses/limitations
- the use of simulation techniques and applications relevant to inrush
- use of computer-based systems for real time monitoring
- mine inrush management plan development requirements and processes
- processes and techniques for determining alarms and trigger points/levels
- audit and review processes and techniques
- emergency response and evacuation procedures
- the effects of coal seam characteristics on inrush
- methods of control of inrush
- types of inrush control zones
- risk management procedures
- applicable mine rescue procedures
- roles and responsibilities in accordance with inrush management plan

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for implement the inrush management plan • implementation of procedures and techniques for the safe, effective and efficient implementation of the inrush management plan • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of inrush management plan elements that best meet the required outcomes • working with others to undertake and complete the implementation of the inrush management plan • consistent successful implementation of the inrush management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site

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	circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of the inrush management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of inrush management plan elements that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate:
	  • working with others to undertake and

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	complete the implementation of the inrush management plan • provision of clear and timely required support and advice on the implementation of the inrush management plan
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Interpret is defined as: the understanding needed by the person within their job role.	
Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood* (definition from AS/NZS 4360:1999 Risk Management).	
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management).	
Mine site historical information may include:	• sedimentology aspects of the mine site relating to subsidence • previous inrushes • gas content and composition • roof and floor technical data • over and underlying strata • water bearing strata • permeability of seam and strata • hydrology • physical property testing results • caving characteristics

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	• ground stress behaviour • mine plans
Inrush may be defined as:	• water or other fluid material, or any material that flows when wet • flammable or noxious gas • which may put the mine or persons at the mine at risk
Inrush control zones are those areas of heightened awareness, necessitating specialised mining, monitoring and assessment techniques e.g. protective drilling.	
Inrush controls may include, but are not limited to:	• controls that eliminate the hazard by removing the damaging energy, e.g. drainage including pumping and ventilation • controls that reduce the magnitude of the hazard (less water, less pressure etc), e.g. drainage, including pumping and ventilation • controls that reduce the likelihood of the event through engineering or hard barriers, e.g. seals • controls that reduce the likelihood of the event through procedural or soft barriers, e.g. establishment of inrush control zones, protective drilling • controls that reduce the likelihood of the event through warnings, e.g. action levels associated with increased water make
Systems of work may include:	• drilling operations • bord and pillar • place changing • long wall • high wall • auger mining • pillar extraction • partial extraction • punch mining • shaft sinking and drifting
Geological and physical conditions may include:	• rank • petrology • moisture • particle size • seam gas • pyrites

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	• seam thickness • multi seams • seam dip • depth of cover • cleat • friability • intrusions
Monitoring may include, but is not limited to:	• continuous and/or periodic monitoring • portable (hand held) monitoring • core samples • visual observation • geological mapping • borehole pressure readings
Inrush hazards and potential sources may include, but are not limited to:	• subsidence or failure of barriers and dam walls • strata failure • gas content and composition • abnormal rainfall events • over and underlying strata • water bearing strata • any peat, moss, sand, gravel, silt, or other material that flows when wet which may exist on or near a mine • any coal peat, moss, sand, gravel, silt, or other material that may flow from a bin or storage facility/structure • permeability of seam and strata • physical properties • caving characteristics • faults • intrusions • surface sources • tidal waters • oceans • surface creeks, rivers, ponds, lakes • surface impoundments or reservoirs • abandoned mines • workings of adjacent current mines • existing workings of the mine • other non-mining underground openings • shafts • wells • pipelines

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	• tunnels
Personnel safety measures may include, but are not limited to:	• remote control mining • limitation of numbers • training • physical barriers, e.g. drilling through stuffing box • emergency equipment, e.g. oxygen self rescuers • personal protective equipment (PPE)
Legislative, **and site requirements** may include:	• legislation and regulations • relevant Australian standards • management plans • manager's rules • OHS policy • code of practice • dams safety committee publications • manufacturer's instructions • safe working or job procedures (or equivalent)
Inrush management system establish criteria and procedures for maintaining a safe environment including:	• hazard identification and quantification • risk assessment • authority and responsibility • controls established to managed identified risks • reporting and communication requirements • document control • audit and review • procedures for mine inrush monitoring • mine plan • action plans • response plans • emergency procedures • individual group responsibilities • training and education procedures
Inrush prevention system must be established in accordance with the NSW Coal Mines (Underground) Regulation 1999 - Division 8, Clause 40 Implementation of an inrush prevention system.	
Audit is defined as: a systematic examination against defined	

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criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives (AS/NZS 4804: 2001).	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU506A Implement strata management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of strata management plans in the coal industry. It includes planning and preparing for the implementation of the strata management plan, implementing the strata management plan, and auditing and reviewing the effectiveness of the strata management plan. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the implementation of the strata management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and communicate the roles and responsibilities, as specified in the strata management plan 1.3. Identify, forecast, schedule and record ***resources*** required for the implementation of the strata management plan 1.4. Identify training needs 1.5. Identify and ***interpret*** the ***risks*** associated with unstable mining structures
2. Implement the strata management plan	2.1. Implement the system of mining in accordance with the strata management plan 2.2. Communicate primary, secondary and other support requirements in accordance with the strata management plan 2.3. Implement and communicate mining sequences in accordance with the strata management plan 2.4. Obtain ***resources*** and allocate in accordance with the strata management plan 2.5. Implement the strata management plan training requirements 2.6. Implement the maintenance program in accordance with the strata management plan 2.7. Implement the strata monitoring and testing system in accordance with the strata management plan 2.8. Monitor procedures in accordance with the strata management plan 2.9. Implement reporting and recording systems in accordance with the strata management plan and legislative requirements 2.10. Implement the emergency response and evacuation plan
3. Audit and review the effectiveness of the strata	3.1. ***Audit*** stable structure ***controls*** for compliance with legislative and strata

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management plan	management plan specifications 3.2. ***Audit*** the strata monitoring and testing systems in accordance with legislative and the strata management plan 3.3. ***Audit*** recording and reporting systems in accordance with legislative and site requirements 3.4. ***Audit*** system maintenance program and procedures in accordance with legislative and site requirements 3.5. ***Audit*** the strata management training plan for currency, relevance and compliance with the strata management plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to implement the strata management plan:

- apply legislative, organisation and site requirements and procedures for implementing the strata management plan
- access, interpret and apply technical information relating to strata management
- access and analyse historical strata management information related to mine and failure mode of mine structures
- interpret and apply design criteria for strata management
- communicate effectively in the workplace
- prepare operating procedures relating to strata management
- conduct and report on audits
- identify and evaluate geological and geotechnical information

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to implement the strata management plan:

- legislative and site requirements for mining structures, including mine plans, ventilation, gas monitoring, strata support and safety management plans
- the systems of mining, including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining, longwall mining (including installation and recovery), the use of breaker line support and fault drivage
- stress including mining induced stress, vertical and horizontal stress, tectonics, and topographical features
- sedimentology, including subsidence, water bearing strata, permeability of seam and strata, hydrology, rock property testing, caving characteristics, windblast, outburst, gas content and over and underlying strata
- systems of work, including bord and pillar, place changing, longwall, highwall, auger mining, pillar extraction, partial extraction, the use of breaker line support and punch mining
- mining structure failure modes
- exploration techniques
- geology and strata gas characteristics
- mining engineering principles
- lithology

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- strata support and monitoring systems
- audit methodologies
- site document control requirements
- mine site historical information
- limitations and controls

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for implementing the strata management plan • implementation of procedures and techniques for the safe, effective and efficient implementation of the strata management plan • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of strata management plan elements that best meet the required outcomes • working with others to undertake and complete the implementation of the strata management plan • consistent successful implementation of the strata management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of the strata management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of strata management plan elements that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the implementation of the strata

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	management plan • provision of clear and timely required support and advice on the implementation of the strata management plan
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Interpret is defined as: the understanding needed by the person within their job role.	
Resources may include, but are not limited to:	• skilled personnel • roof and rib supports • face equipment • power water / gas drainage systems • strata monitoring devices • Standard Operating Procedures (SOP) • training materials
Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood* (definition from AS/NZS 4360:1999 Risk Management).	
Mining structure can be defined as:	• excavation • pillars • roadways • workings • roof, rib and floor
Strata monitoring devices may include:	• convergence indicators • telltales • extensometer • load cells

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	• stress cells
Factors effecting stability of mining structures may include:	• roadway size • pillar sizes • depth of cover • strength of coal and underlying / overlying strata • stress regimes • strata characteristics • longwall chocks • presence of water • systems of mining • breaker line supports • direction of mining • primary and secondary support • geological structures • speed and continuity of extraction
Controls may include:	• restriction of access • setting of temporary and remedial supports • monitoring and reporting • procedures under the strata management plan
Audit is defined as: *a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives* (AS/NZS 4804: 2001).	
Mine design is the process of engineering analysis applied to the systems and sequences involved in mining.	
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management).	
Standard operating procedures (SOP) are also known as safe working procedures, safe operating	

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procedures and standard working procedures.	
Mining systems and **methods** may include, but are not limited to:	• bord and pillar • longwall • highwall • place changing • auger mining • pillar extraction • partial extraction • punch mining
Stress includes, but is not limited to:	• horizontal and vertical tectonic induced stress • mining induced stress • topographical features • stress environment
Geological and hydrology information may be related, but not limited, to:	• subsidence • roof and floor technical data • gas content • over and underlying strata • water bearing strata • permeability of seam and strata • physical properties • caving characteristics • outburst • windblast • faults • intrusions • deformities
Mine site historical information may include, but not limited to:	• existence of previous workings within the work seam or other seam • sedimentology aspects of the mine site relating to subsidence • outburst • gas content/gas composition • roof and floor technical data • over and underlying strata • water bearing strata • permeability of seam and strata • hydrology • rock property testing results • caving characteristics • windblast

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	• adjacent coal seams
Mine design may include in whole or in part requirements relating to:	• mine plant • mining induced stress • ventilation • tunnels • sequencing drivages • stone drivage • shaft sinking • pillar extraction • partial extraction • punch mining • modelling • seam grades • windblast • outburst • geology • gas drainage • multi-seams • fault drivage • spontaneous combustion • roof and floor technical data • over and underlying strata • subsidence • legislative requirements
Mine gases may be seam gases or gases from other introduced sources and may include:	• methane • carbon dioxide • carbon monoxide • oxides of nitrogen • hydrogen • sulphur dioxide • hydrogen sulphide • hydrocarbons • combinations
Coal seam characteristics may include, but are not limited to:	• rank • petrology • moisture • cleat • coal hardness • seam gas • friability • pyrites

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	Or depositional factors such as: • seam thickness • multiple and rider seams • seam dip • depth of cover

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU601A Establish and maintain the spontaneous combustion management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintenance of spontaneous combustion management plans in the coal industry. It includes identifying and clarifying spontaneous combustion hazards and risks, identifying and clarifying spontaneous combustion control systems and procedures, designing and developing the Spontaneous Combustion Management Systems, establishing the Spontaneous Combustion Management Plan, planning and preparing for the implementation of the Spontaneous Combustion Management Plan, and auditing and reviewing the Spontaneous Combustion Management Plan. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and clarify spontaneous combustion hazards and risks	1.1. Identify the causes and hazards of ***spontaneous combustion*** 1.2. Identify and clarify ***coal seam*** characteristics which affect likelihood of ***spontaneous combustion*** 1.3. Identify and clarify the effects of changes in the ***mine atmosphere*** on the risks of ***spontaneous combustion*** 1.4. Identify the impact of mine design and ***ventilation*** on the risks of ***spontaneous combustion*** 1.5. Identify and clarify the impact of water accumulation on the risks of ***spontaneous combustion*** 1.6. Identify ***spontaneous combustion*** risks associated with the planned and unplanned coal accumulation 1.7. Identify ***spontaneous combustion*** risks associated with transport of coal
2. Identify and clarify spontaneous combustion control systems and procedures	2.1. Identify and evaluate the method, purpose and procedures for installation and use of mine monitoring systems with regard to ***spontaneous combustion*** 2.2. Identify and evaluate the method, purpose and procedures for mine design and ***ventilation*** systems with regard to ***spontaneous combustion*** 2.3. Identify and evaluate the methods and purposes of natural and induced ***inertisation*** in the goaf and waste workings, in relation to ***spontaneous combustion*** 2.4. Identify and clarify the scope and impact of gas management on ***spontaneous combustion*** 2.5. Identify and clarify the scope, impact and uses of water management, including water infusion on ***spontaneous combustion*** 2.6. Identify and clarify seal design requirements in terms of ***geological structures***, construction, location and use of correct materials for the ***spontaneous***

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	combustion risks
3. Design and develop the spontaneous combustion management plan	3.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 3.2. Identify, clarify and apply the ***principles of mine design*** with respect to ***spontaneous combustion*** 3.3. Review the effectiveness of mine design process in contributing to the minimisation of the risk of ***spontaneous combustion*** and amend the processes as required 3.4. Incorporate ***ventilation*** systems and controls to minimise the risk of ***spontaneous combustion*** into the development of the management system 3.5. Evaluate ***inertisation*** options that are applicable to the mine and incorporate into the development of the system 3.6. Incorporate mine monitoring systems into the management system to minimise the risk of ***spontaneous combustion*** 3.7. Develop and incorporate ***control methods*** into contingency plans to mitigate the effect of a ***spontaneous combustion*** occurrence
4. Establish the spontaneous combustion management plan	4.1. Establish and incorporate into the management plan ***spontaneous combustion*** management objectives, processes, descriptions, responsibilities and review procedures 4.2. Identify, develop and establish ***hazard*** control procedures associated with ***spontaneous combustion*** 4.3. Develop and establish ***spontaneous combustion management*** monitoring system installation, operation and maintenance procedures 4.4. Develop and establish ***ventilation control device*** installation, operation and maintenance procedures 4.5. Develop and establish ***inertisation*** procedures 4.6. Develop and establish ***spontaneous combustion management*** systems maintenance procedures 4.7. Develop and establish spontaneous

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	combustion system information recording and reporting procedures 4.8. Establish and review trigger levels and responses to minimise the ***hazards*** of ***spontaneous combustion*** 4.9. Establish a program including systems and procedures, to satisfy identified ***spontaneous combustion management*** training requirements 4.10. Incorporate ***audit***, review and updating procedures into the spontaneous combustion management plan
5. Plan and prepare for the implementation of the spontaneous combustion management plan	5.1. Identify and interpret the legislative and site requirements related to the spontaneous combustion management plan 5.2. Access, interpret and clarify the spontaneous combustion management plan 5.3. Identify, clarify and communicate to all personnel roles and responsibilities, as specified in the spontaneous combustion management plan 5.4. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the spontaneous combustion management plan 5.5. Implement the spontaneous combustion training program 5.6. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to the spontaneous combustion management implementation procedures
6. Audit and review the spontaneous combustion management plan	6.1. ***Audit*** the operation of spontaneous combustion monitoring systems for compliance with legislative and gas management plan standards 6.2. ***Audit*** mine ***ventilation*** control devices for compliance with ***Audit*** legislative and mine site requirements 6.3. recording systems for compliance with the gas management plan 6.4. ***Audit*** the maintenance program and procedures for compliance with the ***spontaneous combustion management***

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	plan 6.5. ***Audit*** spontaneous combustion training program for currency, relevance and compliance with the requirements of ***spontaneous combustion management plan*** 6.6. Identify and correct non-compliance or other discrepancies/deficiencies revealed by ***audit***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to establish and maintain the spontaneous combustion management plan:

- apply legislative, organisation and site requirements and procedures for establishing and maintaining the spontaneous combustion management plan
- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- apply the principles of mine design
- assess the risks and consequences of spontaneous combustion
- develop procedures appropriate to mine operations for management of spontaneous combustion
- plan and coordinate work
- identify training needs related to spontaneous combustion

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to establish and maintain the spontaneous combustion management plan:

- causes and effects of spontaneous combustion
- the effects of coal seam characteristics on spontaneous combustion
- legislative and site requirements and instructions
- mine operation procedures
- geological data
- strata control
- mine design relating to spontaneous combustion
- spontaneous combustion management requirements
- methods of control of spontaneous combustion
- principles of ventilation management
- gas management
- mine and goaf ventilation systems
- mine gases
- inertisation principles and techniques

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- underground water management
- seal design and sealing procedures
- spontaneous combustion indicators and ratios
- site environmental monitoring requirements
- risk management procedures
- site legislative inspection requirements
- mine reporting procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining the spontaneous combustion management plan • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of the spontaneous combustion management plan • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of spontaneous combustion management techniques that best meet the required outcomes • working with other to undertake and complete the establishment and maintenance of the spontaneous combustion management plan • consistent successful establishment and maintenance of the spontaneous combustion management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment.

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	Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the establishment and maintenance of the spontaneous combustion management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of spontaneous combustion management techniques that best meet the required outcomes
	  • consistent achievement of required outcomes

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	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the establishment and maintenance of the spontaneous combustion management plan
	  • provision of clear and timely required support and advice on the establishment and maintenance of the spontaneous combustion management plan

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Coal seam characteristics may include inherent factors such as:	• rank
	• petrology
	• moisture
	• particle size
	• seam gas
	• Pyrites
	• depositional factors such as:
	  • seam thickness
	  • multi seams
	  • seam dip
	  • depth of cover

Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs/gobs in the mine.	
Inertisation may be defined as the displacing or reducing of oxygen to a level that will not support combustion. It may be either a natural process using seam gases or a process of introducing incombustible gases.	
Trigger level is a generic term used to describe a level determined at the mine site at which action is	

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initiated or a response made.	
Principles of mine design may include:	• recovery • reserve optimisation • mining direction • geological structures • ventilation • strata control • mining method • productivity • environmental considerations and access • depth of cover • location of adjacent seams • location of adjacent workings
Control methods are processes for the mitigation of spontaneous combustion and may include:	• quenching • grouting • smothering • excavating • ventilation control by pressure balancing • sealing • water injection
Hazards may include:	• irrespirable atmosphere • noxious atmosphere • flammable or explosive mixtures
Spontaneous combustion management plan may include procedures for:	• mine atmosphere monitoring • reporting requirements • auditing • ventilation systems and usage • inertisation techniques • mine plan • action plans • response plans • emergency procedures • individual/group responsibilities • training and education
Audit is defined as: *a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the*	

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organisation's policy and objectives (AS/NZS 4804: 2001).	
Mine gases may include gases such as:	• methane • carbon dioxide • hydrogen sulphide • normal atmosphere gases • other gases produced from the processes of heating coal
Ventilation control devices may include:	• stoppings • overcasts • regulators • preparation seals • fire doors • bulk heads • goaf seals • final seals • pressure chambers
Geological conditions may include:	• faults • dykes • intrusions • strata deformities
Mine atmosphere monitoring may include:	• continuous monitoring • portable (hand held) monitoring • collection of bag samples • gas chromatography • differential pressure measurements across stoppings, seals, solid coal (intake to return) • ventilation measurements from all areas of the mine including sealed areas, waste workings • thermographic monitoring
Sensory spontaneous combustion indicators may include:	• smoke • haze • sweating • smell • heat
Gaseous spontaneous combustion indicators may include increased production of:	• carbon monoxide • carbon dioxide • methane • hydrogen • hydrocarbons or the use of indicator ratios such as:

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	• CO make • Graham's ratio • Tricketts • Morris' Oxides of Carbon ratio • other ratios as determined suitable
Defects to ventilation structures may include:	• deterioration of materials • quality of construction • effects of surrounding strata • physical damage • water damage
Control measures may include:	• removal of coal accumulation • modification of transport procedures • procedures for responding to changes in atmosphere • mine atmosphere monitoring systems • procedures relating to the status of the ventilation system • sealing procedures • goaf monitoring systems • goaf sampling systems • spontaneous combustion inspection system

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU602A Establish and maintain the gas management system

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintenance of gas management systems in the coal industry. It includes identifying, analysing and evaluating gas and outburst hazards and risks, identifying, analysing and evaluating gas control options and measures, designing and developing gas management systems, establishing the gas management system, planning and preparing for the implementation of the gas management system, and auditing and reviewing the gas management system. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify, analyse and evaluate gas and outburst hazards and risks	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify, evaluate and clarify ***coal seam characteristics*** and mine conditions, which contribute to flammable or irrespirable atmospheres or outbursts 1.3. Identify, analyse and evaluate ***hazards*** and ***risks*** relating to gas emissions and outbursts 1.4. Identify, analyse and evaluate the requirements for ***ventilation*** in relation to the types and amounts of gas emissions 1.5. Identify, analyse and evaluate ***gas hazards*** caused by disruption to the ***ventilation*** system and the impact on the mine atmosphere 1.6. Identify, analyse and evaluate the impacts of fire, ***ignition***, outburst and explosion on the gas ***hazards*** 1.7. Identify, analyse and evaluate the impacts of water accumulations on gas management
2. Identify, analyse and evaluate gas control options and measures	2.1. Identify, analyse and evaluate the types and advantages/disadvantages of gas control options and management methods including gas drainage 2.2. Identify, analyse and evaluate the method, purpose and uses of gas ***monitoring*** systems 2.3. Identify, analyse and evaluate methods to maximise the effectiveness of a ***gas management program***
3. Design and develop gas management systems	3.1. Access, interpret and clarify the legislative, and site requirements related to gas management systems 3.2. Establish gas management systems to satisfy the operational conditions of the mine 3.3. Establish surface ***infrastructure***, which eliminates the ***risk*** of induced hazards in relation to potential gas emissions 3.4. Incorporate gas monitoring systems to minimise the potential ***hazards*** of gas

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	3.5. Incorporate ***ventilation*** systems and controls to minimise the ***risk*** of gas leakage 3.6. Incorporate contingency systems to mitigate the ***risks*** and ***hazards*** of gas
4. Establish the gas management system	4.1. Establish gas management system objectives, descriptions and responsibilities and incorporate into the management system 4.2. Identify, develop and establish ***hazard*** control procedures associated with gas management 4.3. Establish gas management ***monitoring*** system installation, operation and ***maintenance*** procedures 4.4. Establish gas control device installation, operation and ***maintenance*** procedures 4.5. Establish gas management systems ***maintenance*** procedures 4.6. Establish gas management system information recording and reporting procedures 4.7. Determine and review ***action*** levels and responses to minimise the ***hazards*** of gas 4.8. Establish gas emergency and evacuation procedures 4.9. Establish a program, including systems and procedures, to satisfy identified ***gas management training*** requirements 4.10. Incorporate, ***audit***, review and update procedures
5. Plan and prepare for the implementation of the gas management system	5.1. Identify and interpret the legislative and site requirements related to gas management system 5.2. Access, interpret and clarify the gas management system 5.3. Identify, clarify and communicate to all personnel roles and responsibilities, as specified in the gas management system 5.4. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the gas management system 5.5. Implement the gas management training program

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	5.6. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to gas management system implementation procedures
6. Audit and review the gas management system	6.1. ***Audit*** mine gas ***monitoring*** systems operations for compliance with legislative and ***gas management system*** 6.2. ***Audit*** mine gas control devices for compliance with mine site requirements 6.3. ***Audit*** recording systems for compliance with the ***gas management system*** 6.4. ***Audit*** the ***maintenance*** program and procedures for compliance with the ***gas management system*** 6.5. ***Audit gas management training*** program for currency, relevance and compliance with the requirements of the ***gas management system*** 6.6. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by ***audit*** 6.7. Respond promptly to instances of non-compliance and other discrepancies/deficiencies revealed by ***audit*** and modify the management system where appropriate 6.8. Identify and evaluate future gas management requirements and incorporate into planning procedures as stipulated by the ***gas management system***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to establish and maintain the gas management system:

- apply legislative, organisation and site requirements and procedures for establishing and maintaining the gas management system
- access, interpret and apply technical information
- access and analyse archival and historical gas information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to gas management
- perform gas planning mathematical calculations
- access, evaluate and apply design criteria for gas management
- interpret computer spreadsheets and gas modelling / simulations
- collect, collate and evaluate gas data
- establish technical procedures relating to gas management
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access, evaluate and apply data from monitoring systems and equipment
- establish gas training requirements, programs, systems and procedures
- apply risk management processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to establish and maintain the gas management system:

- legislative requirements for including air quality, maximum values, control and distribution, flammable gas limits, ventilation fans, gas monitoring and inspections and recording/reporting
- the methods of mine ventilation and their applications/limitations including exhaust/force, antitropal, homotropal, flank returns, ascensional/descensional, bleeder, Z/U/Y systems and other combinations
- the methods of panel gas management and their applications/limitations including homotropal and antitropal (and in conjunction with these, the use of goaf bleed or back return), auxiliary fans, coursed ventilation (narrow side/wide side), machine mounted scrubber systems, compressed air venturis and bleeders
- the impact of mining techniques and mine and panel design on gas management
- the impact of coal characteristics and coal seam gradients on mine gas systems

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- mine gases; the types and their characteristics, sources, physiological effects and methods of detection
- the use and calculation of specific gas emissions
- mine fires; the types, sources of ignition and possible impacts of gas management
- pressure changes; causes and the impacts on gas management
- heat / humidity; the sources and factors which may impact on gas management
- mine fans; fan laws, fan types, performance characteristics, configurations, application and limitations
- gas control devices; the types, purposes, design criteria and specifications, distribution / placement criteria, hazards and limitations including gas drainage
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders
- fixed gas monitoring systems, types, characteristics, uses and limitations
- portable monitoring equipment, types, characteristics, uses and limitations
- functions, capabilities, advantages, limitations and uses of computer modelling and simulation techniques for gas management
- a basic knowledge of computer-based systems for mine gas analysis
- Gas Management System development requirements and processes
- gas surveys; the types, frequency and methods for conducting
- processes and techniques for determining alarms and trigger points / levels
- audit and review processes and techniques
- emergency response and disaster planning processes and techniques
- general uses and application of gas management theory, including:
  - gas laws including Charles and Boyle
  - natural ventilation
  - Coward's Triangle
  - Graham's Ratio
  - Ellicott Diagram
  - gas make
  - Morris' Ratio
  - Trickett's Ratio
  - leakage
  - psychrometry and heat
  - Hughe's and Raybould triangle
  - oxides of carbon ratio
  - Kirkoff's laws
- geological data
- principles of ventilation management
- mine and goaf ventilation systems
- underground water management principles
- gas management drilling techniques
- site environmental monitoring requirements

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- risk management procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining the gas management system • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of the gas management system • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of gas management system elements that best meet the required outcomes • working with other to undertake and complete the establishment and maintenance of the gas management system • consistent successful establishment and maintenance of the gas management system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the establishment and maintenance of the gas management system
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of gas management system elements that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and

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	complete the establishment and maintenance of the gas management system • provision of clear and timely required support and advice on the establishment and maintenance of the gas management system
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Coal Seam characteristics may include inherent factors such as:	• rank • petrology • moisture • particle size • seam gas • pyrites • permeability
Geological conditions may include:	• faults • dykes • intrusions • strata deformities • existing or induced stress or strain ***Or depositional factors such as***: • seam thickness • multiple and rider seams • seam dip • depth of cover • cleats
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management).	
Hazards may include:	• irrespirable atmosphere • noxious atmospheres • flammable or explosive mixtures

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	• induced outburst
Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood* (definition from AS/NZS 4360:1999 Risk Management).	
Ventilation methods may include:	• exhaust/force • anistropal (antitropal) • homotropal • flank returns • ascensional/descensional • bleeder • Z/U/Y systems • overlapping systems • other combinations
Ignition sources may include:	• electrical • static discharge • friction • contraband • spontaneous combustion • naked flame • chemical • explosives
Maintenance of the ventilation system may include:	• inspection • servicing • repair
Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.	
Gas Management System establishes procedures for maintaining a safe environment and may include:	• procedures for mine atmosphere monitoring • reporting requirements • auditing • ventilation system and usage • inertisation techniques • mine plan • action plans • response plans

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	• emergency procedures • individual group responsibilities • training and education procedures • hazard identification and quantification • risk assessment • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review
Gas Management Training applies to:	• mine workers • tradespeople • permanent employees • contractors • mine officials • other special requirements
Audit is defined as: *a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives* (AS/NZS 4804: 2001).	
Principles of mine design include:	• recovery • reserve optimisation • mining direction • geological structures • ventilation • strata control • mining method • productivity • environmental considerations • access
Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.	

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Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs/gobs in the mine.	
Mine gases may include seam gases or gases from introduced sources and may include but not be limited to:	• methane • carbon dioxide • oxides of nitrogen • hydrogen • carbon monoxide • sulphur dioxide • hydrogen sulphide • hydrocarbons • combinations
Ventilation devices may include:	• stoppings • overcasts • regulators • preparation seals • ventilation doors • bulk heads • goaf seals • final seals • pressure chambers • air locks
Explosive control devices may include:	• water barriers • stone dust barriers • trickle dusters • calcium chloride • stone dust • triggered barriers
Gas management devices and options may include:	• gas drainage • infusion • scrubbers • automatic gas detectors • tube bundle systems • gassing device on auxiliary fans and gas monitoring systems • inertisation techniques - high, medium and low
Mine atmosphere monitoring may include:	• continuous monitoring • portable (hand held) monitoring • collection of bag samples

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	• gas chromatography • ventilation measurements from all area of the mine including sealed areas and waste workings
Infrastructure may include:	• pipes • valves • hoses • pumps • drainage plant • flame arresters • power supply to bore holes • cleaning equipment
Types of fires may include:	• solid • liquid • gas • metals
Disruptions/ventilation pressure changes may include those resulting from:	• planned disruptions • changes in barometric pressure • fall of ground • fan changes/failure • ventilation control device changes/failure • outburst • holing into previous workings • re-circulation • ventilation circuit changes • natural ventilation pressure changes • explosions • changes in ambient temperature/humidity • fires • equipment moves • flooding of roadways
Effect of re-circulation may include:	• build up of contaminant concentration (gas, fumes, dust, heat) • decrease in oxygen
Criteria for safe mine ventilation may include:	• statutory and regulatory requirements • mine ventilation management plan • measures to reduce and/or control seam gas • introduced gas • fumes and dust • temperature/humidity and maximum/minimum velocity specifications • ventilation efficiency

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Monitoring devices may include:	• barograph • tube bundle • real time telemetry • portable (hand held) monitoring • bag samples • gas chromatography
Monitoring includes that related to:	• atmospheric pressures • temperature • fire • condition monitoring of ventilation devices
Alarm systems and action plans may include those for:	• gas concentration/make • spontaneous combustion (physical and gaseous) • combustion indicators • condition monitoring for fans (vibration/temperature/current/failures) • ventilation devices • monitoring hardware
Procedures required to support the gas management plan may include those for:	• construction • action response • permit to work • condition monitoring • auditing • maintenance • document control • atmosphere monitoring • ventilation system control • communication systems • survey procedures • sealing procedures • changes • training and recording/reporting

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMCU603A Establish and maintain the gas drainage management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintenance of the gas drainage management plan in the coal industry. It includes: identifying, analysing and evaluating gas drainage hazards, risks and needs, identifying, analysing and evaluating gas drainage control options and measures, designing and developing gas drainage management systems, establishing the gas drainage management plan, planning and preparing for the implementation of the gas drainage management plan, and establishing the process to audit the effectiveness of the gas drainage management system. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify, analyse and evaluate gas drainage hazards, risks and needs	1.1. Identify, evaluate and clarify ***coal seam characteristics*** and conditions which could lead to a requirement for gas drainage 1.2. Identify and clarify the effects of gas drainage on ***mine atmosphere*** 1.3. Identify the requirements for ventilation in relation to gas drainage 1.4. Identify and clarify the impacts of water accumulation on gas drainage
2. Identify, analyse and evaluate gas drainage control options and measures	2.1. Identify and evaluate the types and advantages/disadvantages of gas drainage methods 2.2. Identify and evaluate ***hazards*** relating to gas drainage 2.3. Identify and evaluate the method, purpose and procedures for installation and use of mine monitoring systems with regards to gas drainage 2.4. Identify methods to maximise the effectiveness of a gas drainage program
3. Design and develop gas drainage management systems	3.1. Access, interpret and clarify the legislative, and site requirements related to gas drainage systems 3.2. Design and develop gas drainage systems to satisfy the operational conditions of the mine 3.3. Design and develop the surface and underground infrastructure to minimise the ***risk of hazards*** in relation to gas drainage 3.4. Design and develop monitoring and controls systems for the gas drainage management system
4. Establish the gas drainage management plan	4.1. Develop and establish ***hazard*** control procedures associated with gas drainage 4.2. Establish ***action*** levels to minimise the ***hazards*** of gas drainage 4.3. Develop and establish gas monitoring system installation, operation and maintenance procedures 4.4. Develop and establish gas drainage system

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	installation, operation and recovery procedures 4.5. Develop and establish gas drainage system maintenance requirement procedures 4.6. Develop and establish gas drainage system information recording and reporting procedures 4.7. Establish training requirements for the gas drainage management system
5. Plan and prepare for the implementation of the gas drainage management plan	5.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 5.2. Identify, clarify and communicate to all personnel roles and responsibilities, as specified in the gas drainage management plan 5.3. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the gas drainage management plan 5.4. Implement the gas drainage management training program 5.5. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to the gas drainage management plan
6. Establish the process to audit the effectiveness of the gas drainage management system	6.1. ***Audit*** gas drainage monitoring systems in accordance with legislative and site requirements 6.2. ***Audit*** gas drainage control devices in accordance with legislative and site requirements 6.3. ***Audit*** recording systems in accordance with the ***gas drainage management plan*** 6.4. Audit gas drainage installation, operation, maintenance and recovery procedures 6.5. ***Audit*** the ***gas drainage management training*** plan for currency, relevance and compliance with the requirements of the ***gas drainage management system*** 6.6. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by ***audit***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to establish and maintain the gas drainage management plan:

- apply legislative, organisation and site requirements and procedures for establishing and maintaining the gas drainage management plan
- access, interpret and apply technical information
- access and analyse archival and historical gas information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to gas drainage
- access, interpret and apply geological reports
- perform gas drainage planning mathematical calculations
- access, evaluate and apply design criteria for gas drainage systems and devices
- interpret computer spreadsheets and modelling / simulations
- collect, collate and evaluate gas drainage data
- establish technical procedures relating to gas drainage
- conduct enquiries/investigations and prepare reports
- access, evaluate and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- apply risk management processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to establish and maintain the gas drainage management system:

- legislative and site requirements which may include those for gas drainage drilling, gas drainage installation and recovery, ventilation requirements, return airways gas levels, intake airway gas accumulated levels, gas control and distribution, environmental management, local government requirements, inspections and reporting
- the methods of gas drainage and their applications / limitations against the mine design, mine and panel ventilation systems, systems of mining and current and future mine development
- the impact of gas drainage on mining techniques, mine and panel design and production output
- the impact of the strata geology and coal seam characteristics on the gas drainage management plan, including coal seam gradient, moisture content, friability,

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permeability, gas content, gas composition, the porous features of the coal seam, stresses and intrusions
- outburst mining monitoring procedures
- drilling options and related equipment and techniques, including directional drilling techniques
- hazard management processes and techniques
- content, composition and pressure
- the effects of the gas in the coal seam
- the effects of gas characteristics from roof
- the impacts of accumulation of coal dust after gas drainage has been completed
- pressure changes; causes, the impacts on the ventilation system, and the effects on gas drainage
- heat/humidity; the sources and factors which may impact on gas drainage and personnel
- mine fans; fan laws, fan types, performance characteristics, configurations, applications and limitations in association with the gas drainage management plan
- ventilation control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations in association with the gas drainage management plan
- ventilation control devices; the types, purposes, design criteria and specifications, distribution/placement criteria and limitations
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sales, hurdles, bleeders and purging
- fixed gas drainage monitoring systems types, characteristics, uses and limitations
- portable monitoring equipment for gas drainage purposes, types, characteristics, uses and limitations
- functions, capabilities, advantages, limitations and uses of gas drainage computer modelling and simulation techniques
- use of computer-based systems for mine environment and gas drainage analysis
- gas drainage management plan development requirements and processes
- gas drainage surveys; the types, frequency and method for conducting including pressure/quantity/temperature and gas
- processes and techniques for determining alarms and trigger points / levels
- audit and review processes and techniques
- site control documentation requirements
- emergency response and evacuation procedures
- general uses and applications of ventilation theory, including:
  - Atkinson's equation
  - methods of determining frictional resistance
  - gas laws, including Charles and Boyle
  - natural ventilation pressures
  - gas make
  - leakage

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- determination of mine resistance curves
- regulator and equivalent orifice calculation
- determination of fan operating / duty points
- Kirchoff's laws
- mine operational procedures
- strata control systems and their effects on gas drainage
- mine and goaf ventilation systems
- underground water management principles and systems
- impacts of intersecting and intersected holes and hole design
- site environmental monitoring requirements
- legislative and mine reporting procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining the gas drainage management plan • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of the gas drainage management plan • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of gas drainage techniques that best meet the required outcomes • working with others to undertake and complete the establishment and maintenance of the gas drainage management plan • consistent successful establishment and maintenance of the gas drainage management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the establishment and maintenance of the gas drainage management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of gas drainage techniques that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and

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	complete the establishment and maintenance of the gas drainage management plan • provision of clear and timely required support and advice on the establishment and maintenance of the gas drainage management plan
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Coal seam characteristics may include:	• inherent factors such as rank • petrology • moisture • particle size • seam gas make • pyrites ***Or depositional factors such as***: • seam thickness • multi seams • seam dip • depth of cover • cleats friability • interaction of other coal seams and gas makes • clay bands within the coal seam and molorite zones
Mine atmosphere refers to the atmosphere in all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.	
Hazard is defined as: "*a source of potential harm or a situation with a potential to cause loss*" (definition from AS/NZS 4360:1999 Risk Management).	

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Hazards may include:	• irrespirable atmosphere • noxious atmosphere • flammable or explosive mixtures • outbursts • induced outburst • gas under pressure • location of drainage pipes • static electricity • gas leakage from and into gas pipelines
Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood* (definition from AS/NZS 4360:1999 Risk Management).	
Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.	
Audit is defined as: *a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives* (AS/NZS 4804: 2001).	
Gas drainage management plans establish procedures for maintaining a safe environment including:	• hazard identification and quantification • risk assessment • authority and responsibility • controls established to manage identified risks • reporting and communication • document control
Gas drainage management plan may include:	• procedures for gas drainage drilling program • gas or geological anomaly detection • mine atmosphere monitoring • stimulation techniques • goaf seals

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	• reporting requirements • auditing • ventilation systems and usage • mine plan • action plan • systems of mining • response plans • emergency procedures • individual and group responsibilities • training and education procedures
Principles of mine design may include:	• recovery • reserve optimisation • mining direction • geological structures • ventilation • strata control • mining method • productivity • environmental considerations and access
Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.	
Mine gases may be seam gases or gases from introduced sources and may include but not be limited to:	• methane • carbon dioxide • carbon monoxide • oxides of nitrogen • hydrogen • sulphur dioxide • hydrogen sulphide • hydrocarbons
Ventilation systems may include the use of:	• main mine fan • auxiliary fans • brattice • regulators • seals • stoppings • overcasts • ventilation doors • surface drainage boreholes

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	• pressure chambers
Geological conditions may include:	• faults • dykes • intrusions • strata deformities • induced stresses • depth of overlaying strata • strength of immediate strata • under and over the coal seam • mining lease gas make
Gas make characteristics may include:	• gas content • gas pressure • absorption • desorption • hydrostatic pressure • strata moisture content • permeability and porosity • tectonic stress
Gas drainage monitoring may include:	• continuous monitoring • leakage monitoring (laser beam technology) • portable (hand held) monitoring • collection of bag samples • pipeflow and pressure measurements • gas chromatography • ventilation measurements from relevant areas
Gas drainage infrastructure may include:	• vacuum pumps • pipes • boreholes and stand pipes • gas separators and casing • surface installations • gas drainage plant, including building • valves • hoses • water pumps • flame and lighting arresters • power supply to bore holes • cleaning equipment • air compressors • electricity and water services • pressure gauges and hydration plants
Gas management training	• mine workers

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applies to:	• tradespeople • permanent employees • contractor • mine officials • other special requirements
Alarm systems and action plans may include those for:	• gas concentration/make • combustion indicators • condition monitoring for fans (vibration/temperature/current failures) • ventilation devices • monitoring hardware • temperature alarms
Procedures required to support the gas drainage management plan may include those for:	• construction • action response • permit to work • condition monitoring • auditing • maintenance • document control • atmosphere monitoring • ventilation system control • communication systems • survey procedures • standard operating procedures • changes • training and recording/reporting
Maintenance of the gas drainage system may include inspection, servicing and repair.	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMCU604A Establish and maintain the outburst management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintenance of outburst management plans in the coal industry. It includes identifying, analysing and evaluating hazards associated with mining in outburst prone areas, identifying, analysing and evaluating outburst potential and control options and measures, designing and developing outburst management systems, establishing the outburst management plan, planning and preparing for the implementation of the outburst management plan, and establishing the process to audit the effectiveness of the outburst management plan. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify, analyse and evaluate hazards associated with mining in outburst prone areas	1.1. Identify, evaluate and clarify ***coal seam characteristics*** and conditions which could lead to outburst conditions 1.2. Identify, analyse and evaluate ***hazards*** and ***risks*** relating to outburst 1.3. Identify, analyse and evaluate ***geological and geotechnical*** conditions which may contribute to outburst prone conditions 1.4. Identify, analyse and evaluate the effects of outburst on ***mine atmosphere***, personnel, ***services and infrastructure*** 1.5. Identify the requirements for personnel, ***services and infrastructure*** protection in relation to outburst
2. Identify, analyse and evaluate outburst potential and control options and measures	2.1. Identify, analyse and evaluate the types and advantages/disadvantages of outburst sampling and analytical process options 2.2. Identify, analyse and evaluate ***geological and physical conditions*** of the seam and surrounding strata 2.3. Identify, analyse and evaluate the types and advantages/disadvantages of outburst control methods 2.4. Identify, analyse and evaluate the methods, purposes and capabilities of ***monitoring*** systems with regard to outburst 2.5. Identify, analyse and evaluate control options to address outburst ***hazards*** 2.6. Identify and clarify the scope and impact of gas drainage on outburst prone areas 2.7. Identify training needs
3. Design and develop outburst management systems	3.1. Incorporate drilling systems, including equipment, processes and techniques into the development of the outburst management system 3.2. Incorporate core sampling and related analysis systems, processes and techniques into the development of the outburst management system 3.3. Identify, select and measure the criteria for addressing ***geological and geotechnical***

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	hazards and incorporate into the ***outburst management plan*** 3.4. Incorporate ***personnel safety measures*** and techniques into the outburst management system 3.5. Incorporate ***services and infrastructure*** protection measures into the outburst management system 3.6. Develop monitoring systems, including those for real-time information to minimise the ***risk*** of an outburst 3.7. Design and develop controls systems for the outburst management system
4. Establish the outburst management plan	4.1. Develop and establish outburst drilling, sampling, collection, analysis and reporting procedures 4.2. Establish ***actions*** and procedures required in response to gas threshold levels 4.3. Establish ***geological and geotechnical hazard*** identification and response procedures 4.4. Develop permit to mine procedures in accordance with legislative and site requirements 4.5. Establish ***personnel safety measures*** and techniques 4.6. Establish ***services and infrastructure*** protection measures to minimise damage caused by outburst 4.7. Establish outburst information recording and reporting procedures 4.8. Establish emergency response and evacuation plans 4.9. Establish training requirements for the outburst management plan
5. Plan and prepare for the implementation of the outburst management plan	5.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 5.2. Identify, clarify and communicate to all personnel roles and responsibilities, as specified in the outburst management plan 5.3. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the outburst management plan

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	5.4. Implement the outburst training program 5.5. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to outburst management plan implementation procedures
6. Establish the process to audit the effectiveness of the outburst management plan	6.1. ***Audit*** the outburst management system in accordance with legislative and site requirements 6.2. ***Audit*** outburst drilling and analytical procedures in accordance with legislative and site requirements 6.3. ***Audit*** monitoring systems in accordance with legislative and site requirements 6.4. ***Audit geological and geotechnical identification***, monitoring and response procedures in accordance with legislative and site requirements 6.5. ***Audit*** recording plans and procedures in accordance with legislative and site requirements 6.6. ***Audit*** outburst training plan for currency, relevance and compliance with the requirements of the ***outburst management system*** 6.7. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by ***audit***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to establish and maintain the outburst management plan:

- apply legislative, organisation and site requirements and procedures for establishing and maintaining the outburst management plan
- access, interpret and apply technical information
- access and analyse archival and historical outburst information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to outburst
- perform outburst planning mathematical calculations
- assess the risks and consequences of outburst
- develop procedures appropriate to mine operations for management of outburst
- access and apply design criteria for outburst management systems
- interpret computer spreadsheets and outburst modelling / simulations
- interpret outburst data
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access data from monitoring equipment
- operate hand held monitoring equipment
- establish outburst training requirement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to establish and maintain the outburst management plan:

- legislative and site requirements for mining structures, including mine plans, ventilation, gas monitoring, strata support and safety management plans
- mine planning and design
- the systems of mining, including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage
- stress analysis, including mining induced stress and topography
- sedimentology subsistence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, caving characteristics, outburst, gas content and over and underlying strata
- systems of work, including bord and pillar, place changing, longwall, highwall, auger mining, pillar extraction, partial extraction and punch mining
- initiation techniques

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- mining structure failure modes
- mining and general engineering principles relevant to the behaviour of excavations in rock and coal
- audit methodologies
- site document control requirements
- mine mapping of outburst zones, related geology and features
- the impact of differing geological features and conditions on outburst zones, including faults, dykes, intrusions and strata deformities
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection
- de-gassing; methods of control, including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders
- fixed monitoring systems types, uses / limitations, design criteria, specifications and design processes
- portable monitoring equipment, types, uses / limitations
- the use of simulation techniques and applications relevant to outburst
- use of computer-based systems for real time gas monitoring
- mine outburst management plan development requirements and processes
- processes and techniques for determining alarms and trigger points / levels
- audit and review processes and techniques
- emergency response and evacuation procedures
- the effects of coal seam characteristics on outburst
- methods of control of outburst
- outburst indicators and ratios, including temperature changes, mylonite, coal colour changes, strata sound, crushed coal bands, stretch marks, difficulty of constructing ribs, seam gas pressure, changed cutting conditions
- risk management procedures
- applicable mine rescue procedures
- roles and responsibilities in accordance with outburst management plan

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining the outburst management plan • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of the outburst management plan • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of outburst management techniques that best meet the required outcomes • working with others to undertake and complete the establishment and maintenance of the outburst management plan • consistent successful establishment and maintenance of the outburst management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site

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	circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the establishment and maintenance of the outburst management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of outburst management techniques that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and

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	complete the establishment and maintenance of the outburst management plan • provision of clear and timely required support and advice on the establishment and maintenance of the outburst management plan
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management).	
Hazards may include:	• irrespirable atmosphere • noxious atmospheres • flammable or explosive mixtures • outburst • geological structures
Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood* (definition from AS/NZS 4360:1999 Risk Management).	
Coal seam characteristics may include inherent factors such as:	• rank • petrology • moisture • particle size • seam gas • pyrites ***Or depositional factors such as***: • seam thickness • multi seams

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	• seam dip • depth of cover • cleat • friability • intrusions
Geological and geotechnical information includes that related to, but not limited to:	• subsidence • roof and floor technical data • gas content and composition • over and underlying strata • water bearing strata • permeability of seam and strata • physical properties • caving characteristics • outburst and stress waves • faults • intrusions and deformities
Mine atmosphere refers to the atmosphere in all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.	
Geological and physical conditions of the seam and surrounding strata which may contribute to outburst potential may include:	• cutters • changing cleat • coal • colour • free gas into atmosphere • mylonite • faults and intrusions • stress
Outburst mining management plans establish procedures for maintaining a safe environment including:	• hazard identification and quantification • risk assessment • authority and responsibility • controls established to managed identified risks • reporting and communication • document control • audit and review
Outburst mining management plan may include:	• procedures for mine atmosphere monitoring • reporting requirements • auditing • ventilation systems and usage

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	• pre-drilling techniques • initiation techniques • mine plan • action plans • response plans • emergency procedures • individual group responsibilities • training and education procedure
Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.	
Audit is defined as: "*a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives*" (AS/NZS 4804: 2001)	
Principles of mine design include:	• recovery • reserve optimisation • mining direction • geological structures • ventilation • strata control • mining method • productivity • environmental considerations • access
Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.	
Mine site historical information may include:	• sedimentology aspects of the mine-site relating to subsidence • outburst • gas content and composition

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	• roof and floor technical data • over and underlying strata • water bearing strata • permeability of seam and strata • hydrology • physical property testing results • caving characteristics • ground stress behaviour • mine plans
Mine gases may be seam gases or gases from introduced sources and may include but not be limited to:	• methane • carbon dioxide • carbon monoxide • oxides of nitrogen • hydrogen • sulphur dioxide • hydrogen sulphide • hydrocarbons • combinations
Ventilation structures may include:	• stoppings • overcasts • regulators • preparation seals • fire doors • bulk heads • goaf seals • final seals • pressure chambers
Geological conditions may include:	• faults • dykes • intrusions • strata deformities • existing or induced stress or strain
Mine atmosphere monitoring may include:	• continuous monitoring • portable (hand held) monitoring • collection of bag samples • gas chromatography • ventilation measurements from all areas of the mine, including sealed areas and waste workings
Monitoring may include, but is not limited to:	• continuous monitoring • portable (hand held) monitoring

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	• core samples • visual observation • geological mapping • audiometry • borehole pressure readings
Defects to mine structures may include:	• deterioration of materials • quality of construction • effects of surrounding strata • physical damage • water damage
Services and infrastructure includes:	• pipes • valves • hoses • pumps • drainage plant • flame arresters • power supply to bore holes • cleaning equipment • all other plant and equipment • ventilation
Personnel safety measures may include, but are not limited to:	• remote control mining • alternative air supply • limitation of numbers • training • physical barriers • emergency equipment • personal protective equipment (PPE)

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU605A Establish and maintain the inrush management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintenance of the inrush management plan in the coal industry. It includes identifying, analysing and evaluating potential sources, causes, hazards and effect associated with mine inrush, identifying, analysing and evaluating potential inrush controls, designing and developing inrush management systems, establishing the inrush management plan, planning and preparing for the implementation of the inrush management plan, and establishing the process to audit and review the effectiveness of the inrush management plan. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify, analyse and evaluate potential sources, causes, hazards and effects associated with mine inrush	1.1. Identify the ***potential sources*** and effects of ***inrushes*** 1.2. Analyse and evaluate ***mine site historical information*** for indications of inrush potential 1.3. Identify, analyse and evaluate ***geological and physical conditions*** that contribute to inrush potential 1.4. Identify, analyse and evaluate inrush ***hazards*** and ***risks*** 1.5. Identify, analyse and evaluate the effects of ***inrush*** on mine operations and personnel
2. Identify, analyse and evaluate potential inrush controls	2.1. Identify, analyse and evaluate potential ***inrush controls*** 2.2. Identify, analyse and evaluate ***inrush controls*** to deal with matters identified from the review of ***historical information*** 2.3. Identify, analyse and evaluate ***inrush controls*** to deal with ***geological and physical conditions*** which may contribute to inrush 2.4. Identify, analyse, evaluate and confirm the validity of mine plans and associated records 2.5. Identify, analyse and evaluate the methods, purposes and capabilities of ***mine monitoring systems*** with regard to inrush
3. Design and develop inrush management systems	3.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 3.2. Design and develop inrush controls for addressing inrush hazards for the inrush management system 3.3. Determine ***personnel safety measures*** and techniques into the inrush management system 3.4. Design and/or incorporate ***services and infrastructure*** protection measures into the inrush management system 3.5. Design and develop mine monitoring requirements relating to inrush 3.6. Integrate the system elements to complete

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	the inrush management system design
4. Establish the inrush management plan	4.1. Develop and establish ***inrush hazard*** identification, analysis and reporting procedures 4.2. Establish ***actions*** and procedures required in response to inrush indicators 4.3. Develop permit-to-mine procedures in accordance with legislative and site requirements 4.4. Establish ***personnel safety measures*** and techniques 4.5. Establish ***services and infrastructure*** protection measures to minimise damage caused by inrush 4.6. Establish the monitoring, recording and reporting procedures 4.7. Establish emergency response and evacuation plans 4.8. Establish training requirements for the inrush management plan
5. Plan and prepare for the implementation of the inrush management plan	5.1. Identify and interpret the legislative and site requirements related to the inrush management plan 5.2. Access, interpret and clarify the inrush management plan 5.3. Identify, clarify and communicate to all personnel roles and responsibilities, as specified in the inrush management plan 5.4. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the inrush management plan 5.5. Implement the inrush management plan training program 5.6. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to inrush management plan implementation procedures
6. Establish the process to audit and review the effectiveness of the inrush management plan	6.1. ***Audit*** the inrush management system in accordance with legislative and site requirements 6.2. ***Audit*** mine monitoring systems in accordance with legislative and site

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	requirements 6.3. ***Audit inrush hazard*** identification, monitoring and response procedures in accordance with legislative and site requirements 6.4. ***Audit*** recording plans and procedures in accordance with legislative and site requirements 6.5. ***Audit inrush*** training plan for currency, relevance and compliance with the requirements of the inrush management system 6.6. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by ***audit***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to establish and maintain the inrush management plan:

- apply legislative, organisation and site requirements and procedures for establishing and maintaining the inrush management plan
- access, interpret and apply technical information
- access and analyse archival and historical water storage and inrush information related to the mine
- interpret and apply mathematical and scientific theorems/laws related to inrush
- perform inrush planning mathematical calculations
- assess the risks and consequences of inrush
- develop procedures appropriate to mine operations for prevention of inrush
- access and apply design criteria for inrush management systems
- interpret computer spreadsheets and inrush modelling/simulations
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access data from monitoring equipment
- operate hand held monitoring equipment
- establish inrush training requirement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to establish and maintain the inrush management plan:

- legislative and site requirements for mining structures, including mine plans, ventilation, gas monitoring, strata support and safety management plans
- mine planning and design
- the systems of mining including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage
- stress analysis, including mining induced stress and topography
- sedimentology subsistence, water bearing strata, permeability of seam and strata, hydrology, hydrogeology, physical property testing, caving characteristics, outburst, over and underlying strata
- systems of work, including bord and pillar, place changing, longwall, highwall, auger mining, pillar extraction, partial extraction and punch mining
- mining structure failure modes

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- mining and general engineering principles relevant to the behaviour of excavations in rock and coal
- audit methodologies
- site document control requirements
- mine mapping of inrush zones, related geology and features
- the impact of differing geological features and conditions on inrush zones, including faults, dykes, intrusions and strata deformities
- fixed monitoring systems types, uses/limitations, design criteria, specifications and design processes
- portable monitoring equipment, types, uses/limitations
- the use of simulation techniques and applications relevant to inrush
- use of computer-based systems for real time monitoring
- mine inrush management plan development requirements and processes
- processes and techniques for determining alarms and trigger points/levels
- audit and review processes and techniques
- emergency response and evacuation procedures
- the effects of coal seam characteristics on inrush
- methods of control of inrush
- types of inrush control zones
- risk management procedures
- applicable mine rescue procedures
- roles and responsibilities in accordance with inrush management plan

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining the inrush management plan • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of the inrush management plan • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of inrush management techniques that best meet the required outcomes • working with others to undertake and complete the establishment and maintenance of the inrush management plan • consistent successful establishment and maintenance of the inrush management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the establishment and maintenance of the inrush management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of inrush management techniques that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the establishment and

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	maintenance of the inrush management plan • provision of clear and timely required support and advice on the establishment and maintenance of the inrush management plan
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management).	
Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood* (definition from AS/NZS 4360:1999 Risk Management).	
Mine site historical information may include:	• sedimentology aspects of the mine site relating to subsidence • previous inrushes • gas content and composition • roof and floor technical data • over and underlying strata • water bearing strata • permeability of seam and strata • hydrology • physical property testing results • caving characteristics • ground stress behaviour • mine plans
Inrush may be defined as:	• water or other fluid material, or any material that flows when wet; or

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	• flammable or noxious gas • which may put the mine or persons at the mine at risk
Inrush control zones are those areas of heightened awareness, necessitating specialised mining, monitoring and assessment techniques e.g. protective drilling.	
Inrush controls may include:	• controls that eliminate the hazard by removing the damaging energy, e.g. drainage, including pumping and ventilation • controls that reduce the magnitude of the hazard (less water, less pressure etc), e.g. drainage, including pumping and ventilation • controls that reduce the likelihood of the event through engineering or hard barriers, e.g. seals • controls that reduce the likelihood of the event through procedural or soft barriers, e.g. establishment of inrush control zones, protective drilling • controls that reduce the likelihood of the event through warnings, e.g. action levels associated with increased water make
Systems of work may include:	• drilling operations • bord and pillar • place changing • long wall • high wall • auger mining • pillar extraction • partial extraction • punch mining • shaft sinking and drifting
Geological and physical conditions may include:	• rank • petrology • moisture • particle size • seam gas • pyrites • seam thickness • multi seams • seam dip • depth of cover

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	• cleat • friability • intrusions
Monitoring may include:	• continuous and/or periodic monitoring • portable (hand held) monitoring • core samples • visual observation • geological mapping • borehole pressure readings
Inrush hazards and **potential sources** may include:	• subsidence or failure of barriers and dam walls • strata failure • gas content and composition • abnormal rainfall events • over and underlying strata • water bearing strata • any peat, moss, sand, gravel, silt, or other material that flows when wet which may exist on or near a mine • any coal peat, moss, sand, gravel, silt, or other material that may flow from a bin or storage facility/structure • permeability of seam and strata • physical properties • caving characteristics • faults • intrusions • surface sources • tidal waters • oceans • surface creeks, rivers, ponds, lakes • surface impoundments or reservoirs • abandoned mines • workings of adjacent current mines • existing workings of the mine • other non-mining underground openings • shafts • wells • pipelines • tunnels
Personnel safety measures may include:	• remote control mining • limitation of numbers • training

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	• physical barriers, e.g. drilling through stuffing box • emergency equipment e.g. oxygen self rescuers • personal protective equipment (PPE)
Legislative, **and Site Requirements** may include:	• legislation and regulations • relevant Australian standards • management plans • manager's rules • OHS policy • code of practice • dams safety committee publications • manufacturer's instructions • safe working or job procedures (or equivalent)
Inrush management system establish criteria and procedures for maintaining a safe environment including:	• hazard identification and quantification • risk assessment • authority and responsibility • controls established to managed identified risks • reporting and communication requirements • document control • audit and review • procedures for mine inrush monitoring • mine plan • action plans • response plans • emergency procedures • individual group responsibilities • training and education procedures
Inrush prevention system must be established in accordance with the NSW Coal Mines (Underground) Regulation 1999 - Division 8, Clause 40 Implementation of an inrush prevention system.	
Audit is defined as: *a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements*	

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are implemented effectively and are suitable to achieve the organisation's policy and objectives (AS/NZS 4804: 2001).	

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMCU606A Establish and maintain the mining method and strata management systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintenance of the mining method and strata management systems in the coal industry. It includes: identifying and evaluating the criteria to create and maintain a stable mining structure, identifying and evaluating geological and geotechnical information to establish a stable mining structure, identifying and evaluating mining engineering principles and practices, identifying, evaluating and determining the strata control systems, establishing the strata management plan, planning and preparing for the implementation of the mining method and strata management systems, and establishing the process to audit the effectiveness of the strata management system. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and evaluate the criteria to create and maintain a stable mining structure	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and record the necessary ***resources*** required to create and maintain a stable mining structure 1.3. Identify and evaluate ***historical*** information relating to the mine site 1.4. Identify, assess and record possible mining structure failure modes relevant to the mine site 1.5. Determine the criteria for establishing the stability of mining structures 1.6. Identify the hazards and analyse the ***risks*** associated with failures of mining structures 1.7. Identify and assess the limitations and controls applying to design of stable mining structures
2. Identify and evaluate geological and geotechnical information to establish a stable mining structure	2.1. Identify and determine exploration techniques to gain information about ***geological***, ***hydrological and geotechnical*** conditions 2.2. Identify and evaluate geological, geotechnical and hydrological information 2.3. Identify and evaluate strata gas information 2.4. Identify and evaluate roof, seam and floor lithological and physical properties information 2.5. Identify and evaluate ***stress*** regimes information
3. Identify and evaluate mining engineering principles and practices	3.1. Identify and evaluate mining system types and methods 3.2. Identify potential layouts for stable mining structures from engineering analysis 3.3. Identify and evaluate ***mining constraints*** impacting on the development of a stable mining structure 3.4. Identify and evaluate equipment requirements, appropriate for the development and maintenance of a stable mining structure

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	3.5. Identify the effects of mining induced subsidence on surface areas
4. Identify, evaluate and determine the strata control systems	4.1. Identify, evaluate and determine ground support systems. 4.2. Identify, evaluate and determine ground support installation and ***monitoring*** systems 4.3. Identify and evaluate causes and impacts of strata failure mechanisms 4.4. Identify and evaluate natural and induced stress control methods
5. Establish the strata management plan	5.1. Design and establish methods of entry to the coal seam 5.2. Design and establish systems of mining 5.3. Design and establish sequences for mining operations 5.4. Design and establish strata management procedures 5.5. Identify the training needs and establish a training plan 5.6. Establish action response plans for the management of strata movement
6. Plan and prepare for the implementation of the mining method and the strata management systems	6.1. Access, interpret and clarify the mining method and the strata management system 6.2. Identify and communicate to all personnel roles and responsibilities, as specified in the strata management system 6.3. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the strata management system 6.4. Develop the implementation process for the strata management training plan 6.5. Develop the monitoring and review processes for the strata management system
7. Establish the process to audit the effectiveness of the strata management system	7.1. ***Audit*** mining structures for stability in accordance with legislative and site requirements 7.2. ***Audit monitoring*** systems in accordance with legislative and site requirements 7.3. ***Audit compliance to action response plans*** 7.4. ***Audit*** recording and reporting systems in accordance with legislative and site requirements

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	7.5. ***Audit*** maintenance program and procedures in accordance with legislative and site requirements 7.6. ***Audit*** the training plan for currency, relevance and compliance with the site requirements 7.7. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by ***audit***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to establish and maintain the mining method and strata management systems:

- apply legislative, organisation and site requirements and procedures for establishing and maintaining the mining method and strata management systems
- access, interpret and apply technical information
- access, interpret and apply mine survey information
- access and analyse historical strata information related to the mine and failure mode of mine structures
- interpret and apply mathematical and scientific theorems/laws related to mining structures
- perform mathematical calculations
- interpret and apply design criteria for mining structures systems and devices
- collect, collate and interpret mining structures data
- prepare technical procedures relating to mining structures
- conduct enquiries/investigations and prepare reports
- communicate effectively in the workplace
- access data from monitoring systems and equipment
- operate hand held monitoring equipment
- analyse and report on training needs
- apply risk management processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to establish and maintain the mining method and strata management systems:

- legislative and legislative requirements for mining structures, including mine plans, ventilation, gas monitoring, strata support and safety management plans
- mine planning and design
- the systems of mining, including tunnels, drifts, stone drivage, shift sinking, pillar extraction, partial extraction, punch mining, longwall mining (including installation and recovery), the use of breaker line supports and faults drivage
- stress analysis, including mining induced stress, vertical and horizontal stress tectonics
- sedimentology, including subsidence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, caving characteristics, windblast,

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outblast, gas content and over and underlying strata • systems of work, including bord and pillar, place changing, longwall, highwall, auger mining, pillar extraction, partial extraction, the use of breaker line supports and punch mining • mining structure failure modes • exploration techniques • geology, lithology and strata gas characteristics • mining and general engineering principles relevant to the behaviour of excavations in rock • ground support systems • audit methodologies • pillar design criteria • pillar stress/strain/strength/ratios • width/height ratios • roof support design criteria • Mohr's Circle • Young's Modules • Poisson's Ratio • stress distribution diagrams • factors of safety • mine surveying • mining of coal deposits

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining the mining method and strata management systems • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of the mining method and strata management systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of mining method and strata management techniques that best meet the required outcomes • working with others to undertake and complete the establishment and maintenance of the mining method and strata management systems • consistent successful establishment and maintenance of the mining method and strata management system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources

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	and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the establishment and maintenance of the mining method and strata management systems
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of mining method and strata management techniques that best meet the required outcomes
	  • consistent achievement of required

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	outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the establishment and maintenance of the mining method and strata management systems
	  • provision of clear and timely required support and advice on the establishment and maintenance of the mining method and strata management systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Resources may include but are not limited to:	• skilled personnel • roof and rib supports • face equipment • power water/gas drainage systems • budgetary requirements • standard operating procedures • training materials
Historical information may include, but are not limited to:	• existence of previous workings within the work seam or other seam • sedimentology aspects of the mine site relating to subsidence • outburst • gas content • roof and floor technical data • over and underlying strata • water bearing strata • permeability of seam and strata • hydrology • physical property testing results • caving characteristics • windblast • mine plans
Risk is defined as: *the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood*	

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(definition from AS/NZS 4360:1999 Risk Management).	
Stress includes, but is not limited to, horizontal and vertical tectonic induced stress and mining induced stress.	
Mining system types and methods may include, but are not limited to:	• bord and pillar • longwall • highwall • place changing • auger mining • pillar extraction • partial extraction • punch mining • systems of entry
Stable structure controls include, but are not limited to:	• roadway size • pillar sizes • depth of cover • strength of coal and underlying/overlying strata • stress regimes • strata characteristics • longwall chocks • water ingression • systems of mining • breaker line supports • direction of mining
Audit is defined as: *a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives* (AS/NZS 4804: 2001)	
Mine design is the process of engineering analysis applied to the mining systems and sequences involved in mining.	

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Mine design may include in whole or in part requirements relating to:	• mine plan • mining induced stress • ventilation • tunnels • sequencing • drifts • stone drivage • shaft sinking • pillar extraction • partial extraction • punch mining • modelling • seam grades • windblast • outburst • geology • gas drainage • fault management • multi-seams • fault drivage • spontaneous combustion • roof and floor technical data • overlying strata • subsidence and legislative • legislative requirements
Hazard is defined as: *a source of potential harm or a situation with a potential to cause loss* (definition from AS/NZS 4360:1999 Risk Management)	
Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.	
Geological, **hydrological and geotechnical** information may be related, but is not limited, to:	• subsidence • roof and floor technical data • gas composition and content • over and underlying strata • water bearing strata • permeability of seam and strata

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	• physical properties • caving characteristics • outburst and windblast • faults • intrusions • deformities
Mine **gases** may be seam gases or gases from other introduced sources and may include:	• methane • carbon dioxide • carbon monoxide • oxides of nitrogen • hydrogen • sulphur dioxide • hydrogen sulphide • hydrocarbons • combinations
Mining constraints may include, but are not limited to:	• lease boundaries • stress regimes • seam thickness • seam gas characteristics • surface infrastructure and features • geological features • abandoned workings • adjacent mines
Coal seam characteristics may include, but are not limited to:	• rank • petrology • moisture • cleat • coal hardness • seam gas • friability • pyrites ***or depositional factors such as***: • seam thickness • multiple and rider seams • seam dip • depth of cover
Monitoring may include:	• survey checks and measurements • instruments for measuring strata movement • observation of safe work procedures • instruments for measuring stress • visual observation

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	• instruments for measuring surface subsidence • instruments for measuring water levels

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX201A Suppress dust in open-cut environment

Modification History

Not applicable.

Unit Descriptor

This unit covers suppressing of dust in an open cut environment in the coal and metalliferous mining and extractive industries. It includes applying dust suppressant and minimising dust creation.

Application of the Unit

This unit is appropriate for those working in operational roles, at surface operations within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply dust suppressant	1.1. Access, interpret and apply ***compliance documentation*** relevant to suppressing of dust in an open cut environment 1.2. Receive, interpret and clarify shift changeover details 1.3. Select appropriate ***dust suppression*** method according to site conditions 1.4. Distribute dust suppressant in appropriate pattern according to road type 1.5. Adjust dust suppression activities according to schedule and weather conditions 1.6. Identify, address and report ***environmental issues*** 1.7. Communicate with other personnel using approved communication methods 1.8. Adhere to emergency procedures to ensure safety of personnel, plant and equipment
2. Minimise dust creation	2.1. Select and apply appropriate dust suppression method 2.2. Reduce dust creation by instigating ***rehabilitation*** measures to stabilise dumps and tailings sites

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to suppress dust in open cut environment:

- apply legislative, organisation and site requirements and procedures
- apply decision making techniques
- apply vehicle directions and signals
- apply equipment cleaning requirements and procedures
- apply equipment maintenance requirements and procedures
- apply equipment operating requirements and procedures
- apply instructions
- apply hazard identification procedures
- interpret plans, reports, maps, specifications
- apply records maintenance requirements
- apply safe work practices
- apply troubleshooting techniques
- wear protective equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to suppress dust in open cut environment:

- emergency procedures
- environmental aspects
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data (rock formation)
- maintenance procedures
- mine operation system
- OHS procedures
- plan terminology
- site procedures (operational and maintenance)
- site safety requirements
- sprinkler operation
- water truck operation

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for suppressing of dust in open cut environment • implementation of requirements, procedures and techniques for the safe, effective and efficient suppressing of dust in open cut environment • working with others to suppress dust in open cut environment that meets all of the required outcomes • consistent timely suppressing of dust in open cut environment that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to suppress dust in open cut environment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Dust suppression methods may include:	• chemical • equipment operating techniques • vegetation • sprinklers • water truck sprays (staggered, continuous)
Environmental issues may include:	• culturally-sensitive sites and artefacts • drainage • dust/emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality
Rehabilitation may include:	• company environmental guidelines and processes • dimension of site • fertiliser • flora and/or seeding requirements • personnel requirements • re-contouring plans • survey information • types of reticulation systems • types of vehicles

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Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX202A Install open-cut mine ground support

Modification History

Not applicable.

Unit Descriptor

This unit covers installing open cut mine ground support in the metalliferous mining industry. It includes: organising for ground support installation; setting up and preparing for installation; assembling and installing ground support; and conducting housekeeping activities.

Application of the Unit

This unit covers the installation of ground support mechanisms to provide structural support to rock surface in the extractive process It is appropriate for those working in operational roles, at open cut operations within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise for ground support installation	1.1. Access, interpret and apply ***compliance documentation*** relevant to installing open cut mine ground support 1.2. Receive, interpret and clarify shift changeover details 1.3. Conduct equipment ***pre-operational checks*** to ensure equipment is ready for operation 1.4. Identify, manage and report ***potential hazards and risks*** according to work plan 1.5. Select personal protective equipment appropriate for work activities 1.6. Select appropriate type of ***equipment*** and ground support materials according to job type, ***work plan*** specifications and ***site conditions*** 1.7. Identify, address and report environmental issues 1.8. Communicate with other personnel using approved communication methods 1.9. Adhere to ***safe operating procedures*** to ensure safety of personnel, plant and equipment
2. Set up and prepare for installation	2.1. Conduct work according to site procedures, and current relevant legislation, codes, regulations and standards 2.2. Remove any surface soils and vegetations and expose bedrock 2.3. Scale down loose material and make site safe 2.4. Position drill at designated angle and according to ***capacity of equipment*** 2.5. Position drill holes according to ground support design and ground support plan to maximise lamination of rock layers
3. Assemble and install ground support	3.1. Assemble anchors to full depth according to ***ground support plan*** 3.2. Drill holes to specified diameter and depth in accordance with type of ground support and work plan specifications 3.3. Install and ***tension*** anchors and bolts to

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	appropriate pattern and tensioning degree 3.4. Install ***water suppression devices*** minimising water infiltration to ground supports 3.5. Check ground support periodically and adjust stressing where required to monitor creepage
4. Conduct housekeeping activities	4.1. Clear area to conform to job requirements 4.2. Clean equipment 4.3. Clean and store attachments and other ancillary equipment 4.4. Complete all required records and documentation accurately and promptly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to install open cut mine ground support:

- apply legislative, organisation and site requirements and procedures
- diagnose problems/make decision
- apply drilling techniques
- use hand and power tools
- apply hazard identification procedures
- apply records maintenance requirements
- apply operation monitor techniques
- organise work tasks
- read plans and documents
- apply defect reporting requirements
- apply safe work practices
- work in a team
- apply troubleshooting techniques
- use communications equipment
- use computer systems

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to install open cut mine ground support:

- de-watering procedures and characteristics
- drilling procedures
- emergency procedures
- environmental and heritage procedures
- equipment safety requirements
- geological and technical data
- ground support characteristics and applications
- hazardous goods procedures and consequences of spills
- inspection procedures
- isolation procedures
- mine operational system
- night and day working procedures

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- OHS procedures
- open cut procedures
- operational procedures and checks
- shutdown procedures
- site procedures
- site safety requirements
- start-up procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing open cut mine ground support • implementation of requirements, procedures and techniques for the safe, effective and efficient installing of open cut mine ground support • working with others to install open cut mine ground support that meets all of the required outcomes • consistent timely completion of the installing of open cut mine ground support that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installing of open cut mine ground support

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Pre-operational checks are those checks specified by the manufacturer prior to operating the item of equipment and may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • computer systems • display instrumentation and gauges (indicators, gauges, laser levels) • engine and stop engine lights (orange and red) • fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • visual and audio warning devices and lights
Potential hazards and risks may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods) fires • chemicals • contaminants • equipment • fences • holes • materials • over flying aircraft • over-hanging rocks • personnel • pot holes • unsafe ground • unstable faces • vehicles

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Equipment may include:	• ancillary equipment (generators, pumps, lights, compressors, cleaning equipment, power tools, hand tools) • cutting implements • drill rigs • flags • lifting and handling equipment (winch, crane, block and tackles) • mesh • pegs • rope measuring tape • signs • support vehicles • tapes • witches hats
Ground support and work plan may be verbal or written, and may include:	• access road plan • equipment and resource allocations/requirements • geological details • mine site/site drawings
Site conditions may include:	• amount of scale • broken ground • day and night • location of water table • slope of working surface • stability of ground • stable ground (compaction) • wet and dry • working over old underground workings and voids
Safe operating procedures may include:	• adhering to all site procedures • observing site speed limits • working safely around other machines and personnel • observing right of way in incline and decline • wearing of seat belts • using respiratory devices where appropriate • hazard identification and recognition procedures • awareness and access to escape ways • emergency procedures • observation of electrical and mechanical

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	procedures • First Aid • use of barricades • use of out of service tags and danger tags • use of different types of fire extinguishers
Capacity of equipment and/or attachments may include:	• duration of operation • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations
Tensioning may include:	• loosening • tightening • variation to pattern
Water suppression devices may include:	• de-watering systems • drainage holes • polyfill • shot-crete

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX203B Break oversize rock

Modification History

Not applicable.

Unit Descriptor

This unit covers the breaking of oversize rock in resources and infrastructure industries. It includes: planning and preparing, breaking rocks, and cleaning up the site.

Application of the Unit

This unit applies in all contexts to the breaking of oversize rock in extractive and processing environments without the use of explosives. It is appropriate for those working in operational roles, at worksites within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare to break oversize rocks	1.1. Access, interpret and apply ***compliance documentation*** relevant to the breaking of oversize rock 1.2. Receive, interpret and clarify shift changeover details 1.3. Identify, address and report ***potential hazards and risks*** 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of equipment and/or attachments according to site requirements 1.6. Identify and locate ***oversized rocks*** in designated location 1.7. Assess rock and determine the correct ***method to break rock*** according to dimensions, location and grade of rock 1.8. Communicate with other ***personnel*** using approved communication methods 1.9. Adhere to emergency procedures to ensure safety of personnel, plant and equipment
2. Break rocks	2.1. Notify relevant personnel of rock breaking process 2.2. Apply correct techniques to achieve required rock size
3. Clean up site	3.1. Prepare and remove broken rocks 3.2. Remove or manage ***contaminants*** upon identification

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to break oversize rock:

- apply legislative, organisation and site requirements and procedures
- apply ancillary equipment operating, maintenance and cleaning requirements and procedures
- apply diagnostic techniques
- apply hazard identification procedures
- apply record maintenance requirements
- apply operational monitoring techniques
- apply defect reporting requirements and procedures
- use communications equipment
- apply protective equipment
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to break oversize rock:

- dust suppressant characteristics and limitations
- emergency procedures
- environmental and heritage procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- isolation procedures
- material placement procedures
- mine operational system
- OHS procedures
- rock breaking procedures, methods and limitations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for breaking oversize rock • implementation of requirements, procedures and techniques for the safe, effective and efficient breaking of oversize rock • working with others to break oversize rock and meet all of the required outcomes • consistent timely completion of breaking of oversize rock that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical

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	resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the breaking of oversize rock

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Potential hazards and risks may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • contaminants • equipment • fences • holes • materials • over-hanging rocks, unstable faces and other unsafe ground conditions • personnel • pot holes • vehicles
Oversize rock may include:	• rock that cannot be moved/transported (either by hauling vehicle or conveyor) • rock that is too large to fit through the primary crusher opening
Rock breaking methods may include:	• dropping • pounding • utilising a rock breaking machine
Personnel may include:	• supervisors • contractors • drillers • drivers • holders of appropriate tickets/licensed

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	operators • maintenance staff • personnel authorised by mine management • service personnel • tradesperson

Notifying relevant personnel may include:	• face-to-face advice
	• phone or radio
	• erection of barricades or signs, such as:
	  • cones
	  • tapes
	  • danger signs
	  • sprayed signs

Contaminants may include:	• consumables • ear plugs • plastic • timber • explosives

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX204A Conduct workboat/barge operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting workboat/barge operations in resources and infrastructure industries. It includes: planning and preparation for operations; operating the workboat or barge; carrying out post-operational procedures.

Application of the Unit

This unit is appropriate for those working in operational and maintenance roles, at worksites within:

- Civil construction
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting workboat or barge operations 1.2. Access, interpret and clarify ***survey data*** required to complete the allocated work. 1.3. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations. 1.4. ***Inspect and prepare work area*** in ***coordination with others*** to ***work requirements***
2. Operate workboat/barge	2.1. Resolve coordination requirements with others at the site prior to commencing and during work activities 2.2. Carry out ***pre-start***, ***start-up***, ***mooring and shutdown procedures*** 2.3. Relocate, position and secure workboat/barge for operation 2.4. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.5. Conduct, control and monitor operations within the equipment limitations 2.6. Act on or report monitoring systems and alarms 2.7. Recognise and respond to ***hazardous and emergency situations*** 2.8. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the allocated equipment
3. Carry out post-operational procedures	3.1. Inspect, fault find and report faults 3.2. Carry out operational maintenance, servicing, lubricating and housekeeping tasks 3.3. Process records and reports

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct workboat/barge operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply equipment records maintenance requirements
- apply diagnostic techniques
- use relevant hand tools
- apply procedures for the disposal of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- work wearing personal protective equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct workboat/barge operations:

- site hazard identification and response procedures
- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements
- site communication procedures
- site survey data
- site operational procedures
- workboat/barge pre-start, start-up, operating, mooring and shutdown procedures and techniques
- workboat/barge characteristics, technical capability and limitations
- site record keeping requirements
- site personal protective equipment requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting workboat and barge operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of workboat or barge operations • working with others to undertake and complete workboat or barge operations that meet all of the required outcomes • consistent timely completion of workboat or barge operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete workboat or barge operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Workboat and barges can be:	• in-board or out-board motor powered • diesel or petrol powered
Survey data may include relevant site-specific information in relation to:	• water depths • location of underwater obstacles
Work requirements may come from briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout and out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Inspect and prepare work area may include:	• identification of hazards • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection • determination of appropriate path of movement of the workboat/barge • select and apply appropriate workboat/barge

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	securing system • access ramp preparation and maintenance specified requirements
Coordination with others may include with:	• other workboat/barge personnel • other vessel operators • fuel truck operators • mobile plant operators • processing plant operators • maintenance personnel
Pre-start and start-up procedures include:	• internal and external check of the workboat/barge • check and top up fluid levels (including fuel) • lubrication • inspection of attachments to ensure security and no defects • instrument and control lever checks • reporting defects and damage
Mooring and shutdown procedures include ensuring that:	• workboat/barge is secured as required by site procedures • attachments are rendered safe
Operating techniques may include:	• operating winches • loading and transferring fuel • observing site speed limits • working safely around: • overhead powerlines • other vessels and personnel
Changing work conditions may include variations in:	• changes in river or pond water level • weather conditions • day and night
Hazardous and emergency situations may include:	• powerlines • overhead services • broken anchor or mooring lines • collisions with other vessels • major leaks • flooding • storms and lightning • underwater obstacles • fuel spillages

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Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX301A Conduct Dredging Operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of dredging operations in the metalliferous mining and extractive industries. It includes: the planning and preparation for operations; and carrying out the operation and post operational procedures for dredges.

Application of the Unit

Dredges can be: suction, cutter-suction, diesel or diesel-electric. This unit is appropriate for those working in a operational roles, at worksites within:

- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conducting of dredging operations 1.2. Access, interpret and clarify ***geological and survey data*** required to complete the allocated work 1.3. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations. 1.4. ***Inspect and prepare work area*** in ***coordination with others*** to work requirements 1.5. Prepare a work plan that effectively, efficiently and safely meets the work requirements
2. Operate dredge	2.1. Communicate with others at the site using approved communications methods and resolve coordination requirements prior to commencing and during work activities 2.2. Carry out ***pre-start***, ***start-up***, ***mooring and shutdown procedures*** 2.3. Relocate position and secure dredge for operation 2.4. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions***. 2.5. Conduct, control and monitor operations within the equipment limitations 2.6. Act on or report monitoring systems and alarms 2.7. Recognise and respond to ***hazardous and emergency situations*** 2.8. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the allocated equipment
3. Carry out post-operational procedures	3.1. Inspect, fault find and report faults 3.2. Carry out ***operational maintenance***, servicing, lubricating and housekeeping tasks

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	3.3. Process records and reports

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct dredging operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply equipment records maintenance requirements
- apply diagnostic techniques
- use hand tools
- apply procedures for disposal of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- work wearing personal protective equipment
- apply operations directing techniques
- apply hazard identification procedures
- apply hazardous goods handling requirements and procedures
- interpret ground conditions
- interpret documents, plans, reports, maps, specifications
- apply operations monitoring techniques
- organise work tasks
- apply defect reporting requirements
- apply safe work practices
- select and fit personal protective equipment
- work in a team
- apply troubleshooting techniques
- use communications equipment
- use computer systems

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct dredging operations:

- site hazard identification and response procedures
- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements

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- site communication procedures
- site product characteristics
- site geological and survey data
- site operational procedures
- dredge pre-start, start-up, operating and shutdown procedures and techniques
- dredge characteristics, technical capability and limitations
- site record keeping requirements
- site personal protective equipment requirements
- anchoring procedures
- anchor move procedures
- dredge preparation procedures
- dredging clean-up procedures
- emergency procedures
- environmental and heritage procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- hazardous goods procedures and consequences of spills
- indicator readings
- isolation procedures
- ladder swing capability and limitations
- mine operational system
- monitoring procedures
- night and day working procedures
- OHS procedures
- open cut procedures - dredging
- operational procedures and checks
- shutdown procedures/start up procedures
- site procedures
- site safety requirements
- sounding procedures
- centre-line procedures
- dredge manoeuvring procedures
- plant move procedures
- retreat procedures
- side-line cable replacement procedures
- working face dangers

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting dredging operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conduct of dredging operations • working with others to undertake and complete dredging operations that meets all of the required outcomes • consistent timely completion of dredging operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete dredging operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include relevant site-specific information in relation to:	• rock, sand or gravel type and characteristics • deposit strata • deposit bed conditions
Survey data may include relevant site-specific information in relation to:	• limits of extraction • finished surface and sub-surface batter requirements • depth of pond
Work requirements may come from briefings, handovers, shift change and work orders and may include:	• nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout and out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Inspect and prepare work area may include:	• identification of hazards, including; • health and safety • environmental • selection and implementation of control measures for the hazards identified, including PPE • safeguarding site and non-site personnel by: • erection of barricades and posting of signs

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	• selection of appropriate equipment to ensure personnel safety and protection • determination of appropriate path of movement of the dredge and slurry lines • select and apply appropriate dredge securing system • conducting sounding and determine pond depth • setting up or confirming centreline • moving anchors • access ramp preparation and maintenance specified requirements
Coordination with others may include with:	• other dredge personnel • other vessel operators • laboratory personnel • mobile plant operators • processing plant operators • maintenance personnel
Pre-start and start-up procedures include:	• internal and external check of the dredge and work boat • check and top up fluid levels (including fuel) • lubrication • inspection of attachments to ensure security and no defects, including: • ladder • cables • instrument and control lever checks • reporting defects and damage
Mooring and shutdown procedures include ensuring that:	• retreat from dredging position • dredge, slurry line and other vessels are secured as required by site procedures • attachments are rendered safe
Operating techniques may include:	• operating winches and spuds • suction head positioning • injection water • cutter adjustment and technique • working to a centreline • changing centrelines • working to a face • using full swing limit • maximising ladder depth • working safely around:

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	• overhead powerlines • other vessels and personnel
Changing work conditions may include variations in:	• feed grading/density • feed contamination • feed variations • hard intruding materials • varying plant requirements • changes in river or pond water level • weather conditions • day and night
Hazardous and emergency situations may include:	• powerlines • overhead services • broken anchor or mooring lines • collisions with other vessels • major leaks • flooding • storms and lightning • electrical • noise
Operational maintenance may include:	• replacing cables

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX302B Assess ground conditions

Modification History

Not applicable.

Unit Descriptor

This unit covers the assessing of ground conditions in the resources and infrastructure industries. It includes: preparing for entry to area to be assessed; inspecting and assessing ground conditions; and recording and reporting on ground conditions.

Application of the Unit

This unit applies to the assessment of underground and surface ground conditions for safe working before entry. It is appropriate for those working in operational roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for entry to area to be assessed	1.1. Access, interpret and apply ***compliance documentation*** relevant to the assessing of ground conditions 1.2. Determine and confirm ***ground*** areas to be inspected and assessed 1.3. Obtain ***information*** on ground condition of each area to provide an initial assessment 1.4. Arrange ***communications*** methods with other workers 1.5. Select ***personal protective equipment*** appropriate for work activities 1.6. Select and obtain appropriate ***supportequipment*** for ground assessment 1.7. Identify, address and report ***potential hazards*** 1.8. Ensure that adequate ventilation is flowing into the work area, 1.9. Safely secure working area with barricades or advice to others working in or near the working site 1.10. Ensure that area to be assessed is adequately illuminated
2. Inspect and assess ground conditions	2.1. Conduct visual inspection of work area to identify adverse conditions which could affect ground stability and safetyWhere area is assessed as being stable, use ***appropriate equipment***/***techniques*** to confirm ground stability and remove loose material before continuing to next area, or commencing work 2.2. Where area cannot be made safe or ground is assessed as unstable, barricade and install warning signs 2.3. Continuously assess ground conditions during work activities
3. Record and report ground conditions	3.1. Record ground condition assessment results and action taken 3.2. Report ground conditions and action taken to relevant personnel for follow-up action

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assess ground conditions:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical and safety information
- communicate with and coordinate activities with others
- apply plant and equipment records keeping requirements
- apply environmental compliance requirements
- apply isolation procedures
- apply scale/bar down procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assess ground conditions:

- basic geology
- types of ground which are assessed
- unsafe ground conditions
- site preparation procedures
- washing down procedures and equipment
- ground inspection and assessment procedures
- communication procedures and methods
- worksite security methods and equipment
- site recording and reporting systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assessing of ground conditions • implementation of requirements, procedures and techniques for the safe, effective and efficient assessment of ground conditions • working with others to assess ground conditions and meet all of the required outcomes • consistent timely completion of assessment of ground conditions that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the assessment of ground conditions

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Type of **ground** to be assessed may include:	• Decline • ore drive/ ore body • footwall and quartz margin • hanging wall • limestone, quartz, shale, sulphide materials • major shears or faulting • damp blocky areas (lubricated) • unravelling blocky ground • competent blocky ground • bedding angle of rock as presents itself in openings • different types of ground support • 'bellies' and 'undercuts' • different mineral or rock contacts • ground with poor support or bearing capabilities • washouts
Information may be obtained from:	• cross-shift workers • supervisors • survey reports • training courses • site-specific information • industry-based electronic information such as stability monitoring systems • site-based geotechnical experts

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Communications may include:	• hand signals • direct communication • verbal • mine level plans • notice boards
Personal protective equipment may include:	• gloves to be worn when barring • sleeves to be rolled down • safety lanyard if working near edge or in a man-platform
Support equipment for ground assessment may include:	• danger barricades and signage • serviceable, effective spot light for high headings • jumbo lights • lights on loader with platform • hoses with tails • water services and manifolds • torch or stope light for additional lighting • in high headings or openings, a loader with man-platform and lights on • ancillary equipment
Potential hazards may be from crushing by rock falls, and may be caused by:	• commencing scaling work from unsafe or unsupported ground • other people approaching the work area and being allowed to enter un-scaled area • rock as it falls or slides down a scaling bar • barring down directly above self • large spans of unsupported laminated material that falls • having insecure footing and a 'bad' retreat • not reading shears/ block joints and faults correctly to identify rock that can move • not sounding and testing ground where different mineralisation and rock types meet • non-bonding of rock types • advancing into un-scaled areas without scaling the area first (having a quick look) • failing to recognize that dust falling indicates large rocks moving that may fall • shattering rock as it falls from the roof or face
Adverse conditions may include:	• fresh rock falls • bellies and undercuts

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	• cracks and fissures • discontinuities • floor heave • three or more discontinuities or cracks with opposite dips (crack angle running into rock) which may form a wedge, block or slab, which is not bolted or otherwise supported • water seeping out of discontinuities that were previously dry • stope pillars that are higher than they are wide • signs of stress such as material that has flaked off walls and pillars • rock bolt plates that have been flattened or are 'doming' in, instead of out (plates that are beginning to turn 'inside out') • where the plate is split or the nut has pulled through the plate • straps that are under tension bowing out under obvious load • evidence that the rock bolt is taking load • rock bolts, plates and straps, which have corroded • timbers which are splitting, bending or have failing headboards • concrete reinforcement that is cracking, flaking or fallen
Appropriate equipment/techniques to confirm ground stability may include:	• varying length scaling bars fitted with centre rubber for rock deflection • manual scaling • hydro scaling • mechanical scaling, for example using an excavator or similar fit-for-purpose machine

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMEX401A Apply pit plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application of the pit plan in the coal and metalliferous mining and extractive industries. It includes the requirements for planning, preparing for, initiating, monitoring, adjusting and reporting on the execution of the plan.

Application of the Unit

This unit is appropriate for those working in a supervisory or technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, prepare for and initiate pit operations tasks	1.1. Access, interpret and apply ***compliance documentation*** relevant to the undertaking of pit operations 1.2. Access and share with team members the ***geological and survey data*** required to complete the pit operations task. 1.3. Access and share with team members the overall and the short term objectives of the site ***pit plan*** 1.4. Identify, investigate and evaluate likely ***hazards*** involved in the extraction operation and activities that require appropriate controls to maintain safety whilst achieving production targets 1.5. Prepare an ***action plan***, in consultation with team members, which makes best use of the available resource and takes into account the requirements of the pit plan 1.6. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of pit operations task 1.7. Issue clear and timely ***instructions*** to team members and others involved for the safe, effective and efficient conduct in the pit operations tasks
2. Monitor, adjust and report on execution of the pit plan	2.1. Ensure safe, effective and efficient execution of pit operations tasks 2.2. Monitor ***pit plan performance*** to ensure achievement of planned outcomes 2.3. Initiate adjustments to work programs to take into account non-achievement of planned outcomes. 2.4. Complete and submit reports as required by the pit plan and other relevant requirements and procedures 2.5. Recommend changes to improve the safety, efficiency and effectiveness of the pit plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply pit plans:

- apply legislative, organisation and site requirements and procedures
- provide team leadership
- apply communication skills
- choose extraction and associated techniques
- choose and assign plant and equipment
- apply procedures to develop and administer work plans
- write reports

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply pit plans:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- pit plan
- team leadership techniques
- operational techniques required for execution of the plan
- relevant plant and equipment operations appreciation
- work planning techniques
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application of the pit plan • implementation of appropriate procedures and techniques for the safe, effective and efficient application of the pit plan • working with others to plan, prepare and apply the pit plan • provision of clear and timely instruction and supervision by the individual of those involved in applying the pit plan • evidence of the consistent successful application of the pit plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and apply the pit plan
	  • provision of clear and timely instruction and supervision by the individual of those involved in the application of the pit plan

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • water tables or other water sources
Survey data may include relevant site-specific information in relation to:	• floor heights • bench widths • grades
Pit plan may include:	• limits of extraction area • land clearing and overburden stripping and stockpiling • raw feed extraction requirements (such as sequencing, face heights, bench widths) • bank stability criteria and supervision requirements • raw feed blending requirements • access and in-pit road requirements (such as grades, widths, turning and passing areas) • dewatering and water management requirements and procedures • finished pit shape and face requirements • rehabilitation and environmental works requirements (progressive and final) • tailings deposition/treatment requirements and procedures • roads maintenance requirements and procedures • reporting and record requirements and

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	procedures
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Action plan may include:	• extraction method • sequencing of activities • targets for the work group • materials transport • stockpiling • support services • waste dumping • measures to meet quality requirements
Resources may include:	• labour • materials • services • equipment
Instructions may issued in briefings, **handovers**, **and work orders** and may include:	• nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Pit plan performance critical aspects greatly depend on the type of mining and the activities being carried out by each work group. Some examples include:	• sequence of operations • interdependence of extraction and transport units • haul road, crusher and potential limiters • reliability of plant and recovery options • blasting timing size and interaction with other mining activities • in pit, waste dump and stockpile reserves, available storage space • potential bottlenecks in the production system • weather dependent activities • timing of maintenance activities and other stop events • time to completion of current step in site development • road maintenance

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	• flooding

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX402A Supervise dredging operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervising of dredging operations in resources and infrastructure industries. It includes: planning, preparing for and initiating operations; and monitoring, adjusting and reporting on the execution of operations.

Application of the Unit

This unit is appropriate for those working in a supervisory or technical specialist roles, within:

- Civil construction
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, prepare for and initiate operations	1.1. Access, interpret, apply and share with team members ***compliance documentation*** relevant to conducting dredging operations 1.2. Access and share with team members the ***geological****and****survey data*** required to complete the dredging operations 1.3. Prepare an action plan, in consultation with team members, which makes best use of the available resource and takes into account the requirements of the ***dredging plan*** 1.4. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of dredging operations 1.5. Issue clear and timely ***instructions*** to team members and others involved for the safe, effective and efficient conduct in the dredging operations
2. Monitor, adjust and report on execution of the operations	2.1. Ensure safe, effective and efficient execution of tasks in accordance with the dredging plan 2.2. Monitor dredging operations performance to ensure achievement of planned outcomes 2.3. Initiate adjustments to work programs to take into account non-achievement of planned outcomes 2.4. Complete and submit reports as required 2.5. Recommend changes to improve the safety, efficiency and effectiveness of the dredging operations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise dredging operations:

- apply legislative, organisation and site requirements and procedures
- provide team leadership
- chose appropriate operational techniques
- chose and assign appropriate plant and equipment
- apply procedures for develop and administer work plans

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise dredging operations:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- dredging operations plan
- team leadership techniques
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of dredging operations • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of dredging operations • working with others to plan, prepare and conduct dredging operations • provision of clear and timely instruction and supervision by the individual of those involved in the dredging operations • evidence of the consistent successful supervision of dredging operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct dredging operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the dredging operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • water tables or other water sources
Survey data may include relevant site-specific information in relation to:	• floor heights • bench widths • grades
Dredging plan may cover:	• limits of extraction area • land clearing and overburden stripping and stockpiling • raw feed extraction requirements (such as sequencing, cut depths) • bank stability criteria and supervision requirements • raw feed blending requirements • access road and ramp requirements • anchorage and cable management requirements • slurry and tailings line management requirements • power and fuel line management requirements • setting up slurry discharge arrangements (including cyclones) • dewatering and water management requirements and procedures • finished pit shape and face requirements • rehabilitation and environmental works

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	requirements (progressive and final) • tailings deposition/treatment requirements and procedures • reporting and record requirements and procedures
Resources may include:	• labour • materials • services • equipment
Instructions may issued in briefings, **handovers**, **and work orders** and may include:	• nature and scope of tasks • achievement targets • refuelling arrangements • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX403A Apply the principles of canal construction

Modification History

Not applicable.

Unit Descriptor

This unit covers applying the principles of canal construction in the civil construction industry. It includes: ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of canal construction tasks are carried out.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to undertaking ***canal construction*** tasks 1.2. Access, interpret and clarify the ***specific task information and requirements*** 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets the task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of the task 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of the task 2.3. ***Set out*** tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of canal construction tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply the principles of canal construction:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of canal construction tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures
- provide recommendations for the improvement of the safe, effective and efficient execution of canal construction tasks

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Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply the principles of canal construction:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques
- resource requirements and procedures
- activities scheduling requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- canal construction sequencing
- canal construction and related activities' terminology
- set out requirements and procedures
- drainage requirements
- works planning techniques
- monitoring methods
- engineering survey principles
- slope management requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the applying of the principles of canal construction • implementation of appropriate procedures and techniques for the safe, effective and efficient application of the principles of canal construction • working with others to plan, prepare and conduct canal construction • provision of clear and timely instruction and supervision by the individual of those involved in canal construction • evidence of the consistent successful canal construction
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct canal construction
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduction of canals

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Canal construction may include:	• dredging • extraction by earthmoving equipment
Specific task information and requirements may include:	• site geological data • site geotechnical data • site hydrological data • site meteorological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related tasks • coordination, timing and budgeting requirements
Job plan may include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements

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	• occupational health and safety requirements • excavation shoring requirements • slope management requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • barges • construction materials • sub-contractor services
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	• control lines • cleared width • batters • off-sets
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements

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Initiate may include:	• written communication • oral communication
Canal construction practice may include:	• site preparation methods • site set out • excavation methods • load and haulage methods • bank stabilisation methods • sediment control methods

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX404B Apply and monitor systems for stable mining

Modification History

Not applicable.

Unit Descriptor

This unit covers applying and monitoring of systems for stable mining in the metalliferous mining industry. It includes: planning and preparing for and applying the design system, and applying monitoring and maintenance procedures.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the application of the design system	1.1. Access, interpret and apply ***compliance documentation*** relevant to the stable mining 1.2. Communicate and clarify work group and individual responsibilities and tasks 1.3. Identify, obtain and allocate ***resources*** required for the application of the ***design*** system 1.4. Identify and satisfy individual training needs through accessing the established design systems, programs and plans 1.5. Access and interpret safe operating procedures 1.6. Identify and interpret the ***risks*** associated with unstable mining structures
2. Apply the design system	2.1. Communicate, apply and monitor approved design system 2.2. Communicate and apply primary, secondary and other support ***systems*** 2.3. Identify and assess mining constraints impacting on the maintenance of a ***stable mining*** structure in accordance with the design system 2.4. Install, monitor and assess ground support systems 2.5. Identify and assess system failures 2.6. Apply and monitor mining sequences in accordance with the design system 2.7. Identify and assess virgin and induced ***stress*** control methods 2.8. Apply emergency response and evacuation plans and procedures throughout the work and report, where appropriate 2.9. Apply and monitor ***safe operating procedures*** throughout the work and report, where appropriate 2.10. Contribute to systems ***audit*** and review requirements
3. Apply monitoring and maintenance procedures	3.1. Schedule and carry out inspection, repair and maintenance activities in accordance

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	with design systems 3.2. Record, report and review maintenance and monitoring requirements and activities

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply and monitor systems for stable mining:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information
- access and analyse archival and historical mine management information related to the mine and failure mode of mine structures
- interpret and apply design criteria for mine management
- communicate effectively in the workplace
- apply operational procedures relating to mine management
- conduct and report on audits
- identify and evaluate geological and geotechnical information
- propose practical recommendations for identified key issues

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply and monitor systems for stable mining:

- legislative and statutory requirements for mining structures including mine plans, ventilation, gas monitoring, strata support and safety management plans
- the systems of mining including tunnels, drives, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage
- stress including mining induced stress, vertical and horizontal stress tectonics
- sedimentology including subsidence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, caving characteristics, gas content, and over and underlying and adjacent rock formations
- systems of work including bord and pillar, place changing, rock casing, auger mining, pillar extraction, partial extension and punch mining
- mining structure failure modes
- exploration techniques
- geology and gas characteristics
- mining engineering principles
- ground support systems
- audit methodologies
- historical information
- identifying and clearly communicating key issues

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying and monitoring systems for stable mining • implementation of appropriate procedures and techniques for the safe, effective and efficient application and monitoring of systems for stable mining • working with others to plan, prepare, apply and monitor systems for stable mining • provision of clear and timely instruction and supervision by the individual of those involved in applying and monitoring systems for stable mining • evidence of the consistent successful application and monitoring of systems for stable mining
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare, apply and monitor systems for stable mining
	  • provision of clear and timely instruction and supervision by the individual of those involved in applying and monitoring systems for stable mining

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Resources may include:	• skilled personnel • rock mechanics underground supports and equipment • power water/gas drainage systems • budgetary requirements
Mine **design** is the process of engineering analysis applied to the systems and sequences involved in mining and may include:	• requirements relating to footwall and hanging wall competency • mine plant • mining induced stress • ventilation, tunnels • sequencing • drives • shaft sinking • pillar extraction • partial extraction • punch mining • modelling • ore grades • geology • fault management • multi-seams • fault drivage • roof and floor technical data • over and underlying strata • footwall and longwall subsidence • legislative and statutory requirements

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	• thickness • multiple and rider ore bodies • ore body dip and depth of cover
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Mining **systems** may include:	• bord and pillar • rock casing • outfill • overhand • underhand • place changing • auger mining • pillar extraction and extraction • partial extraction • punch mining • systems of entry
Stable mining structure controls may include:	• drive size • pillar sizes • depth of cover • underlying/overlying and adjacent rock formations • stress regimes • strata characteristics • water ingression • systems of mining • direction
Stress includes:	• horizontal and vertical tectonic induced stress and mining induced stress
Standard operating procedures (SOP) are also known as:	• safe working procedures, safe operating procedures and standard working procedures
Audit is:	• the validation process to ensure the system, procedures and processes meet the established objectives and are implemented

Unit Sector(s)

Materials Extraction

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX405A Apply and monitor systems and methods of surface coal mining

Modification History

Not applicable.

Unit Descriptor

This unit covers applying and monitoring the systems and methods of surface mining in coal mining operations. It includes: planning and preparing for monitoring the application of the mining system; monitoring and reporting mine development operation; monitoring waste management procedures; monitoring stockpile formation and reclaiming systems; and identifying and communicating hazards related to engineering maintenance procedures

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles at surface operations, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for monitoring the application of the mining system	1.1. Access, ***interpret*** and apply ***compliance documentation*** relevant to ***mining systemsand methods*** of surface coal mining 1.2. Access and interpret site risk management, OHS, environment, other appropriate systems and ***standard operating procedures*** 1.3. Identify and assess the ***risks*** associated with unstable ***mining structures***
2. Monitor and report mine development operation	2.1. Monitor the application and communication of the approved mining system 2.2. Identify and assess mining constraints impacting on the maintenance of ***stable mining structure*** 2.3. Monitor, assess, rectify and report the method of mining 2.4. Assess and report strata spoil and dump failures and implement appropriate control measures 2.5. Identify and monitor the application of the mining sequences 2.6. Identify, assess and record failure mechanisms , including virgin and induced ***stress*** control methods and implement appropriate control measures 2.7. Identify and apply emergency response and evacuation plans and procedures and report 2.8. Monitor and report standard operating procedures 2.9. Contribute to systems ***audit*** and review requirements
3. Monitor waste management procedures	3.1. Identify and assess surface and groundwater information 3.2. Monitor the implementation of the drainage system 3.3. Monitor and report the measures taken to mitigate the impact of water and drainage issues
4. Monitor stockpile formation	4.1. Identify stockpile requirements

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and reclaiming systems	4.2. Monitor and report stockpile configuration 4.3. Identify and assess the stockpile operation to meet mine site requirements and implement appropriate control measures
5. Identify and communicate hazards related to engineering maintenance procedures	5.1. Identify and control ***hazards*** relating to the inspection, repair and engineering maintenance activities 5.2. Monitor, report and review engineering maintenance activities

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply and monitor systems and methods of surface mining in coal mining operations:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information
- apply operations planning procedures
- access and analyse archival and historical strata management information related to the mine and failure mode of mine structures
- interpret and monitor the application of design criteria for strata management
- communicate effectively in the work place
- apply operational procedures relating to strata management
- conduct and report on audits and inspections
- identify and evaluate geological and geotechnical information

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply and monitor systems and methods of surface mining in coal mining operations:

- legislative and statutory requirements for mining structures , including mine plans, mining methods and safety management plans
- the systems of mining
- interpret visual signs of stress , including mining induced stress, adverse joining, fault orientation, spoil characteristics
- sedimentology , including subsidence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, over and underlying strata
- mining systems of work
- stable structure control and maintenance of excavation
- geology, hydrogeological, strata and strata gas characteristics
- coal seam characteristics which may include rank, petrology, moisture, cleat, coal hardness, seam gas, friability, pyrites, depositional factors such as seam formation, seam thickness, multiple and rider seams, fault folding, seam dip and depth of cover
- basic mechanical, electrical and pressurised fluid safety
- mining engineering principles
- audit inspection, communication and reporting methodologies
- job safety analysis

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- mine site historical information
- people management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the applying and monitoring the systems and methods of surface coal mining • implementation of appropriate procedures and techniques for the safe, effective and efficient application and monitoring the systems and methods of surface coal mining • working with others to plan, prepare and conduct systems and methods of surface coal mining • provision of clear and timely instruction and supervision by the individual of those involved in surface coal mining • evidence of the consistent successful applying and monitoring of systems and methods of surface coal mining
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare, apply and monitor the systems and methods of surface coal mining
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the systems and methods of surface coal mining

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Interpret is defined as:	• the understanding needed by the person within their job role
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mining systemsand methods may include:	• highwall mining • pre strip • inter burden removal • spoil pits • stockpiles, dumps and safety berms • development of coal pits, roads and ramps • the use of various mining equipment , including draglines, truck and shovel, excavators, bucketwheel, scraper, high wall miners, augers and drills • mining areas which contain heating • coal face protection from blasting • reclamation from spoil dumps • dragline benching • the sequences involved in the development of the mining process as specified in the mine design
Standard operating procedures (SOP's) are:	• also known as safe working procedures, safe operating procedures and standard working procedures
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood

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Mining structures may include:	• excavations • high walls • low walls • benches • dumps • haul roads
Stable mining structure controls may include:	• roads • strength of coal and underlying/overlying strata • stress regimes • strata characteristics • water ingression • systems of mining • direction of mining
Stress includes, but is not limited to:	• horizontal and vertical tectonic induced stress • mining induced stress
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation policy and objectives
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX406A Apply and monitor mine transport system and production equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of mine production and transport systems in the coal and metalliferous mining industries. It includes the planning and preparing for and the applying and monitoring of the systems for the operation and maintenance of production and transport systems and equipment; and applying, monitoring and maintenance procedures.

Application of the Unit

This unit is appropriate for those working in a supervisory or technical specialist roles, within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the operation and maintenance of ***transport systems*** and ***production equipment***	1.1. Access, interpret and apply ***compliance documentation*** relevant to the application and monitoring of mine production and transport systems 1.2. Identify and interpret the legislative and site requirements related to ***transport systems*** and ***production equipment*** 1.3. Identify and confirm the purpose of ***transport systems*** and ***production equipment*** 1.4. Identify ***hazards*** associated with the installation and operation of transport systems and production equipment, evaluate ***risks*** and apply controls 1.5. Identify individual ***training*** needs
2. Apply and monitor the systems for the operation and maintenance of transport systems and production equipment	2.1. Apply site and manufacturer's requirements to the installation of equipment and systems at the work site 2.2. Apply commissioning procedures and report outcomes as per site requirements 2.3. Assess the impacts of equipment and systems on work processes and record and report processes to meet equipment and site requirements 2.4. Apply operational and maintenance programs and procedures 2.5. Apply and monitor procedures for reviewing and modifying work processes 2.6. Apply and monitor emergency response and evacuation plans and procedures 2.7. Apply and monitor safe operating procedures throughout the work and report, where appropriate 2.8. Participate in systems ***audit*** and review requirements
3. Apply monitoring and maintenance procedures	3.1. Schedule and carry out inspection, modification, repair and ***maintenance*** activities 3.2. Record, report and review maintenance and monitoring requirements and activities

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply and monitor mine transport systems and production equipment:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information
- access, interpret and apply briefings and handover details
- assess the risks and consequences attached to production and transport systems and equipment
- apply procedures appropriate to mine operations for management of production and transport systems and equipment
- plan and coordinate work
- apply [procedures to identify training needs related to production and transport systems
- interpret and apply manufacturer's instructions
- apply maintenance and modification systems
- propose practical recommendations for identified key issues

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply and monitor mine transport systems and production equipment:

- legislative and site requirements and instructions including transport rules, no go zones for mobile equipment, maintenance schemes, SOP's, training, legislative testing on diesel vehicles, battery charging, underground fuel depots, conveyor belts
- mine operation procedures
- assessment of geological structures
- mine plans
- mine design relating to production and transport systems and equipment
- production and transport systems and equipment management requirements
- environmental monitoring requirements
- risk management procedures
- production and transport systems and equipment statutory inspection requirements
- lifting, towing and tying down procedures
- mine reporting procedures
- emergency response and evacuation planning processes and techniques

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- maintenance and modification systems
- audit review processes and techniques
- production and transport equipment and systems; the types, uses, characteristics and limitations appropriate for safe operation at the mine site including braking systems
- isolation and safe control of energy sources including electrical, hydraulic, pneumatic, diesel
- safety design features of production and transport systems including traffic control devices
- standard operating procedures relating to production and transport equipment
- identifying operational hazards including noise, dust, lighting, ergonomics, remote control, physical clearance, confined space, visibility, seating, vibration and machine equipment and personal protection
- training systems
- computer based systems
- fire prevention techniques and fire fighting systems in relation of production and transport equipment
- identifying and clearly communicating key issues

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application and monitoring of mine production and transport systems • implementation of appropriate procedures and techniques for the safe, effective and efficient application and monitoring of mine production and transport systems • working with others to plan, prepare, apply and monitor mine production and transport systems • provision of clear and timely instruction and supervision by the individual of those involved in applying the mine production and transport systems • evidence of the consistent successful application and monitoring of mine production and transport systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular work sites may • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare, apply and monitor mine production and transport systems
	  • provision of clear and timely instruction and supervision by the individual of those involved in the application of mine production and transport systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Interpret is defined as:	• the understanding needed by the person within their job role
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Transport systems include capacities for personnel, equipment/materials and product and may be:	• wheeled • railed • tracked • skidded • conveyor • product slurry pumped • shaft and drift winding based
Transport items may include:	• rubber tyred man transport • multipurpose vehicles • load haul dump • forklifts • skid steer loader • grader • locomotives (electric/diesel) • rail mounted personnel carriers • rolling stock • drift haulage systems • monorail • shearer carriers • personnel carriers • chock recovery vehicles (mules) • mine dozer • head gear

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	• cages • skips • winding apparatus • communications • control system discharge • loading facilities • counter balances • conveyor belts • drive heads • tail ends • transfer points • surge bins • inter seam bins • fabricated bins • chain conveyors • batching stations • dewatering systems • water reticulation pumping stations
Production Equipment (manual or remote control) may include:	• shearer • armoured face conveyor • pantech • hydraulic roof supports • stage loader • face drill rigs • shuttle cars • ram cars • ratio/breaker feeders • breaker line support • roof bolters (mobile and hand held) • rib bolters • road header • continuous miners • in-seam miners • high wall miners • auger miners • loaders • shotfiring • hydraulic mining
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured

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	in terms of consequences and likelihood
Site documentation andtraining policy may include:	• legislative requirements • management plans • procedures
Audit is:	• the process by which validation of procedures, processes and systems is assured
Maintenance may be divided into:	• predictive/preventative/scheduled • compliance • breakdown

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX501A Implement pit plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of pit plans in the coal and metalliferous mining and extractive industries. It includes preparation for, planning, initiating, monitoring and adjusting and reporting on the implementation of pit plans.

Application of the Unit

This unit is appropriate for those working in a management or technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for development of the pit plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the implementation of the ***pit plan*** 1.2. Confirm the ***geological***, ***geotechnical***, ***hydrogeotechnical***, ***hydrological and survey****data* relevant to the implementation of the pit plan 1.3. Access, interpret and clarify the ***pit development parameters and strategies*** relevant to the implementation of the *pit plan*
2. Prepare the pit plan	2.1. Involve ***internal and external stakeholders*** in the planning process in a way that uses their contribution effectively and gains their support for the outcomes 2.2. Develop and document the pit plan in accordance with the pit development parameters and strategies, the confirmed geological, geotechnical, hydrogeotechnical, hydrological and survey data 2.3. Identify and acquire the ***resource*** required for the implementation of the pit plan 2.4. Identify and arrange any training required for personnel involved in the pit operations 2.5. Prepare and present the pit operations budget
3. Initiate, monitor and adjust the implementation of the pit plan	3.1. Issue and explain the pit plan to team members and others involved, for the safe, effective and efficient implementation of the pit development 3.2. Provide timely ongoing support and advice to those implementing the pit plan 3.3. Ensure records and reports are maintained and issued 3.4. Monitor the pit implementation of the pit plan against pit development parameters, strategies, the budget 3.5. Resolve anomalies in consultation with relevant stakeholders and issue appropriate instructions for adjustments to the plan

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	and/or its implementation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement pit plans:

- apply legislative, organisation and site requirements and procedures
- interpret and apply legislative and organisational requirements
- interpret and apply geological, hydrological and survey data
- provide team leadership
- apply procedures for selecting construction techniques
- apply procedures for selecting and assigning plant and equipment
- apply procedures for selecting development strategies
- apply procedures for selecting plant and equipment
- apply procedures to develop, initiate and administer work plans
- interpret and apply operational performance data

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement pit plans:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- geological data
- geotechnical
- hydrogeological data
- hydrological data
- survey data
- pit development strategic plan and its parameters and strategies
- pit development options and procedures
- operational techniques required for execution of the plan
- plant and equipment capabilities
- team leadership techniques
- work planning techniques/team leadership techniques
- consultative and coaching techniques
- work monitoring methods
- recording and reporting systems
- training systems
- emergency response and evacuation planning processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation of pit plans • implementation of procedures and techniques for the safe, effective and efficient implementation of pit plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the implementation of pit plans • consistent successful implementation of pit plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of pit plans
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the implementation of pit plans
	  • provision of clear and timely required support and advice on the implementation of pit plans

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations; • Equal Employment Opportunity, Disability Discrimination
The pit plan is:	• the operational plan for the execution of part of the pit development in accordance with the sites pit development requirements parameters and strategies. It may cover a single stage in a multi-staged development or a specific period of time, such as a budget period
Pit plan may include site procedures and/or work instructions regarding:	• risk management requirements • occupational health, safety and environmental requirements • marking out of extraction area and ensuring extraction is within these limits • land clearing and overburden stripping and stockpiling requirements • raw feed extraction requirements (such as sequencing, face heights, bench widths) • raw feed blending requirements • bank, face and slope stability criteria, risk management and supervision requirements • access and in-pit road requirements (such as grades, widths, turning and passing areas) • dewatering and water management requirements and procedures • extraction area finished shape and face requirements • rehabilitation and environmental works requirements (progressive and final) • tailings deposition/treatment requirements and procedures

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	• roads maintenance requirements and procedures • reporting and record requirements and procedures
Geological data may include:	• limits of the deposit • rock (or other resource) types and characteristics, which may include: • ore and coal quality variations • coal, overburden, inter seam thicknesses and properties • parting or inter seams • faults and joints
Geotechnical data may include:	• material strengths • weak planes • stresses • rock mass strength • failure mode analysis
Hydrogeological data may include:	• groundwater • artesian water
Hydrological data may include:	• rainfall • surface water, existing streams and dams • catchment areas and runoff characteristics • groundwater and bores
Survey data may include:	• site and neighbouring land form • site and neighbouring boundaries and structures • site and neighbouring roads and other infrastructure • approved limits of extraction • title details • blasting layouts • earth movement surveys
Pit development parameters and strategies may include:	• limits of extraction • minimum operating distances from other operations or neighbouring structures or land use • raw feed requirements to meet product need • raw feed blending requirements • annual extraction or sales limitations • environmental works • processing plant location • haulage requirements

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	• land clearance • stripping and stockpiling soil • progressive and final rehabilitation requirements • final landform and use • maximum instantaneous charge • bench heights • safe slopes • water management requirements
Internal and external stakeholders may include:	• site and off-site employees • contractors • equipment suppliers • geologists, surveyors and/or draughtspersons • regulatory authorities representatives • community representatives • site neighbours • customers
Resources may include:	• financial • labour • materials • services • plant • equipment • computer models • plan preparation

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX502A Implement systems and methods of mining

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementing of systems and methods of mining in the metalliferous mining industry. It includes: planning and preparing for, implementing, auditing and reviewing the effectiveness of the design system.

Application of the Unit

This unit is appropriate for those working in a management or technical specialist role, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for design systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to the implementing of systems and methods of mining 1.2. Access, interpret and clarify the ***design*** system documentation 1.3. Identify, clarify and communicate the roles and responsibilities, as specified in the design system 1.4. Communicate and clarify work group, individual responsibilities and tasks 1.5. Identify, forecast and record ***resources*** required for the implementation of the design system 1.6. Implement the program to satisfy identified design system training requirements 1.7. Identify and interpret the risks associated with unstable mining structures 1.8. Access and interpret safe operating procedures
2. Implement the design system	2.1. Communicate primary, secondary and other support ***systems*** in accordance with the design system 2.2. Implement and communicate mining sequences in accordance with the design system 2.3. Obtain and allocate resources in accordance with the design system 2.4. Implement the design system training requirement 2.5. Implement a maintenance program in accordance with the design system 2.6. Implement A monitoring system in accordance with the design system 2.7. Implement reporting and recording systems in accordance with the design system 2.8. Monitor implementation procedures to ensure compliance with the approved plan 2.9. Implement emergency and evacuation plan and procedures

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3. Audit and review the effectiveness of the design system	3.1. Audit ***stable structure*** controls for compliance with statutory and *design* system specifications 3.2. Audit stable structure standards for compliance with statutory and site requirements 3.3. Audit monitoring systems for compliance with statutory and design plan standards 3.4. Audit recording and reporting systems for compliance with statutory and site requirements 3.5. Audit system maintenance program and procedures for compliance with statutory and site requirements 3.6. Audit the design training program for currency, relevance and compliance with the design plan 3.7. Audit emergency and evacuation plan and procedures for compliance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement systems and methods of mining:

- apply legislative, organisation and site requirements and procedures
- apply exploration techniques
- apply mining constraints
- access, interpret and apply technical information relating to mine management
- access and analyse archival and historical mine management information related to the mine and failure mode of mine structures
- interpret and apply design criteria for mine management
- communicate effectively in the workplace
- apply [procedures for preparing operating procedures relating to mine management
- conduct and report on audits
- identify and evaluate geological and geotechnical information

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement systems and methods of mining:

- legislative and statutory requirements for mining structures including mine plans, ventilation, gas monitoring, strata support and safety management plans
- the systems of mining including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage
- stress including mining induced stress, vertical and horizontal stress tectonics
- sedimentology including subsidence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, caving characteristics, windblast, gas content and over and underlying strata
- systems of work including bord and pillar, place changing, rock casing, open stopping, outfill, auger mining, pillar extraction, partial extraction and punch mining
- mining structure failure modes
- development, administration and review of procedures that apply to the system
- exploration techniques
- geology and mine gas characteristics
- stable mining systems design and functionality
- mining engineering principles

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- lithology
- ground support systems
- audit methodologies
- mine site historical information
- limitations and controls

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementing of systems and methods of mining • implementation of procedures and techniques for the safe, effective and efficient implementation of systems and methods of mining • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of systems and methods of mining that best meet the required outcomes • working with others to undertake and complete the implementation of systems and methods of mining • consistent successful implementation of systems and methods of mining
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of systems and methods of mining
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of systems and methods of mining that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and

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	complete the implementation of systems and methods of mining • provision of clear and timely required support and advice on the implementation of systems and methods of mining
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • coded of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mine **design** is the process of engineering analysis applied to the systems and sequences involved in mining and may include:	• in whole or in part footwall and hanging wall competency requirements relating to mine plant • mining induced stress • ventilation • tunnels • sequencing • drives • stone drivage • shaft sinking • pillar extraction • partial extraction • punch mining • modelling • ore grades • geology • fault management • fault drivage • roof and floor technical data • over and underlying strata • footwall and longwall subsidence • maintenance strategies and plans • legislative and statutory requirements
Resources may include:	• skilled personnel • rock mechanics underground mine supports and equipment

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	• power water/gas drainage systems • budgetary requirements
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Standard operating procedures (SOP) are also known as:	• safe working procedures, safe operating procedures and standard working procedures
Mining **systems** may include:	• bord and pillar • rock casing • open stopping • overhead • underhand • outfill • glory hole • place changing • auger mining • pillar extraction and extraction • partial extraction • punch mining • systems of entry
Audit is:	• the validation process to ensure the system, procedures and processes meet the established objectives and are implemented
Stable structure controls may include:	• roadway size • pillar sizes • depth of cover and underlying/overlying strata • stress regimes • underground opening characteristics • water ingression • systems of mining • breaker line supports • direction of mining

Unit Sector(s)

Materials Extraction

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX503A Manage dredging operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the managing of dredging operations in resources and infrastructure industries. It includes preparation for, planning, initiating, monitoring and adjusting and reporting on the implementation of dredging operations.

Application of the Unit

This unit is appropriate for those working in a management or technical specialist roles, within:

- Civil construction
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the to the management of dredging operations 1.2. Confirm the relevant ***geological and survey data*** 1.3. Access, interpret and clarify the relevant ***parameters***
2. Plan the program	2.1. Involve ***internal and external stakeholders*** in the planning process in a way that uses their contribution effectively and gains their support for the outcomes 2.2. ***Select and identify source of the equipment*** to be used for the safe, effective and efficient implementation of the ***dredging plan*** 2.3. Develop and document the dredging plan in accordance with the dredging operations parameters, the confirmed geological and survey data and relevant requirements and procedures 2.4. Identify and acquire the ***resources*** required for the implementation of the dredging plan 2.5. Identify and arrange any training required for personnel involved in the dredging plan 2.6. Prepare and present the dredging plan budget
3. Implement, monitor and adjust the program	3.1. Issue and explain the dredging plan to team members and others involved, for the safe, effective and efficient implementation of the plan 3.2. Provide timely ongoing support and advice to those implementing the dredging plan 3.3. Ensure that the dredge area is correctly marked out in accordance with the dredging plan 3.4. Ensure records and reports are maintained and issued 3.5. Monitor the dredging plan performance against dredge operations parameters, the budget 3.6. Resolve anomalies in consultation with

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	relevant stakeholders and issue appropriate instructions for adjustments to the plan and/or its implementation

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied.

This includes the ability to carry out the following as required to manage dredging operations:

- apply legislative, organisation and site requirements and procedures
- interpret and apply legislative and organisational requirements
- interpret and apply geological and survey data
- provide team leadership
- apply procedures for selection of operational techniques
- apply procedures for selection and assignment of plant and equipment
- develop, initiate and administer work plans
- interpret and apply operational performance data

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used.

This includes knowledge of the following, as required to manage dredging operations:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- geological and survey data
- dredging parameters
- pit development options and procedures
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- team leadership techniques
- consultative and coaching techniques
- work monitoring methods
- recording and reporting systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the management of dredging operations • implementation of procedures and techniques for the safe, effective and efficient management of dredging operations • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete dredging operations • consistent successful management of dredging operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the management of dredging operations
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of dredging options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete dredging operations
	  • provision of clear and timely required

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	support and advice on the dredging operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include:	• rock, sand or gravel type and characteristics • deposit strata • deposit bed conditions
Survey data may include:	• limits of extraction • finished surface and sub-surface level and batter requirements • underwater obstacles
Dredging plan **parameters** may include:	• legislative requirements • development consent requirements • operating hours limitations • required production volumes • existing processing plant capacity • catering for the rock, sand or gravel characteristics • maximum dredging depth • catering for tidal or current conditions • maximum and minimum slurry delivery distances
Internal and external stakeholders may include:	• site and off-site employees • contractors • equipment suppliers • geologists, surveyors and/or draughtspersons • regulatory authorities representatives • community representatives • site neighbours

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Selection and identification of the source of equipment may include:	• site geological factors • dredging plan parameters • availability of organisation's equipment • availability of contractors equipment • comparative costs of various options
Dredging plan may cover:	• risk management requirements • occupational health and safety requirements • environmental requirements • limits of extraction area • land clearing and overburden stripping and stockpiling, • raw feed extraction requirements (such as sequencing, cut depths) • bank stability criteria and supervision requirements • raw feed blending requirements • access road and ramp requirements • anchorage and cable management requirements • slurry and tailings line management requirements • power and fuel line management requirements • setting up slurry discharge arrangements (including cyclones) • dewatering and water management requirements and procedures • finished pit shape and face requirements • rehabilitation and environmental works requirements (progressive and final) • tailings deposition/treatment requirements and procedures • reporting and record requirements and procedures
Resources may include:	• financial • labour • materials • services • plant and • equipment

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Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX601A Plan pit development

Modification History

Not applicable.

Unit Descriptor

This unit covers the planning of pit development in the coal and metalliferous mining and extractive industries. It includes: determining the design parameters and strategies; preparing pit development strategic plan; and initiating, monitoring and adjusting the implementation of the pit development.

Application of the Unit

This unit is appropriate for those working in a management or technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine pit design parameters and strategies	1.1. Access, interpret and apply ***compliance documentation*** relevant to planning pit development 1.2. Identify, interpret and clarify relevant site ***geological***, ***geotechnical***, ***hydrogeological***, ***hydrological***, ***and survey data*** and use it to development and document the ***pit design and development parameters*** and strategies 1.3. Identify, interpret and clarify relevant site ***marketing information*** and use it to development and document pit design and development parameters and strategies
2. Prepare pit development strategic plan	2.1. Involve ***internal and external stakeholders*** in the planning process in a way that uses their contribution effectively and gains their support for the outcomes 2.2. Design the final pit profile based on the production requirements, costs, geological and survey data and relevant compliance documentation 2.3. Design staged development of the pit based taking into account all the relevant pit design and development parameters and strategies 2.4. Prepare contingency plans that provide optional strategies in the event ***changed circumstances*** 2.5. Select and document the extracting method or methods to be applied based on the resource characteristics, pit development parameters and economic considerations 2.6. Determine and document ***resource*** implications of the plan and strategies for their acquisition and use 2.7. Identify and arrange any training required for personnel involved in the pit development and operations 2.8. Develop and document record and reporting requirements and procedures for the monitoring of the pit development and operations 2.9. Prepare and present the pit development

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	business plan/budget, including contingency plans
3. Initiate, monitor and adjust the implementation of the pit development	3.1. Issue and explain the pit strategic plan to team members and others involved, for the safe, effective and efficient implementation of the pit development 3.2. Provide timely ongoing support and advice to those implementing the pit development 3.3. Ensure records and reports are maintained and issued in accordance with the parameters and strategy requirements and other relevant requirements 3.4. Monitor the pit development performance against the strategic plan's parameters, strategies and budget; resolve anomalies in consultation with relevant stakeholders; and issue appropriate instructions for adjustments to the plan and/or its implementation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to plan pit development:

- apply legislative, organisation and site requirements and procedures
- interpret and apply:
  - legislative requirements
  - organisational requirements
  - geological, geotechnical, hydrogeological data
  - hydrological data
  - survey data
  - marketing data
- interpret approvals licence conditions
- apply processes to set targets
- apply procedures for incorporating extraction methods, material transportation and storage systems into pit plan
- provide team leadership
- apply procedures for selecting development strategies
- apply procedures for selecting plant and equipment
- apply procedures for developing and initiating development plans
- interpret and apply operational performance data

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to plan pit development:

- legislative and organisation risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- geological, geotechnical, hydrogeological data
- hydrological data
- survey data
- marketing information
- mining and transportation methods
- pit development parameters
- pit development options and procedures
- consultative and coaching techniques
- team leadership techniques
- operational techniques required for execution of the plan

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- plant and equipment capabilities
- work planning techniques
- recording and reporting systems
- work monitoring methods
- training systems
- emergency response and evacuation planning processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the planning of pit development • implementation of procedures and techniques for the safe, effective and efficient completion of pit development plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of pit development options that best meet the required outcomes • working with others to undertake and complete the planning and implementation of pit development • consistent and timely completion of pit development plans and their implementation
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of pit development options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete pit development plans
	  • consistent and timely gaining of approval of pit development plans
	  • provision of clear, timely required support and advice on the implementation of pit

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	development plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include:	• limits of the deposit • coal quality variations • rock (or other resource) types and characteristics • ore, coal, overburden, inter seam thickness/properties • faults and joints • water tables or other water sources • partings or inter seams
Geotechnical data may include:	• material strengths • weak planes • stresses • rock mass strength • failure mode analysis
Hydrogeological data may include:	• groundwater • artesian water
Hydrological data may include:	• rainfall • surface water • catchment areas • runoff characteristics • springs • existing streams, bores and dams
Survey data may include:	• site and neighbouring land form • site and neighbouring boundaries and structures

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	• site and neighbouring roads and other infrastructure • approved limits of extraction • title details • blasting layouts • earth movement surveys
Pit design and development parameters may include:	• limits of extraction due to licence constraints, economics, resource • minimum operating distances from other operations or neighbouring structures or land use • raw feed requirements to meet product needs • raw feed blending requirements • annual extraction or sales limitations • environmental works • product specification • processing plant location • haulage requirements • land clearance • stripping and stockpiling soil • progressive and final rehabilitation requirements • final landform and use • maximum instantaneous charge • bench heights, and safe slopes • water management requirements
Marketing information may include:	• product specifications • sales volumes
Internal and external stakeholders may include:	• site and offsite employees • contractors • customers • equipment suppliers • geologists, surveyors and/or draughtspersons • regulatory authorities representatives • community representatives • site neighbours
Changed circumstances may include:	• changed market conditions or requirements • variations in the raw feed requirements • changed geotechnical conditions • accident
Resources may include:	• financial

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	• labour • materials • services • equipment • computer models • plan preparation

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX602A Establish and maintain surface mining ground control and slope stability systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintenance of surface mining ground control and slope stability systems in the coal and metalliferous mining and extractive industries. It includes identifying and evaluating: the criteria to create and maintain ground control and slope stability, geological and geotechnical information to establish ground control and slope stability, mining engineering methods, and control options; establishing the ground control and slope stability system; and auditing and review the effectiveness of the ground control and slope stability system.

Application of the Unit

This unit is appropriate for those working in a management or technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and evaluate the criteria	1.1. Access, interpret and apply ***compliance documentation*** relevant to surface mining ground control and slope stability 1.2. Identify, access and interpret mine survey data and ***historical information*** relating to the mine site 1.3. If required identify the necessary ***resources*** required to assess ground control and slope stability issues 1.4. Review actual and predicted ground control and slope stability performance in the mine 1.5. Establish the criteria for establishing ground control and slope stability to acceptable performance levels 1.6. Assess ***risks***, determine acceptable levels of risk and identify critical issues related to ground control and stability systems in the mine
2. Identify and evaluate geological and geotechnical information	2.1. Identify all relevant geological, ***geotechnical***, ***hydrogeological data*** 2.2. Arrange further exploration, monitoring, sampling or testing to assist assessment of ground control and slope stability issues 2.3. Assess potential ground movement and slope instability situations 2.4. Identify and evaluate overburden and inter-seam characteristics and physical properties 2.5. Where appropriate identify and evaluate ***stress*** regimes, blast vibration, seismic activity etc
3. Identify and evaluate mining engineering methods	3.1. Evaluate mining system types and methods impact on ground control and slope stability 3.2. Identify potential layouts to improve ground control and slope stability from engineering analysis 3.3. Identify and evaluate mining constraints impacting on the development of ground control and slope stability options 3.4. Identify and evaluate equipment requirements, appropriate for the

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	development and maintenance of ground control and slope stability
4. Identify and evaluate control options	4.1. Identify water control methods to improve ground control or slope stability 4.2. Identify and evaluate ground support systems or methods of mining to provide appropriate ground control and slope stability 4.3. Identify and evaluate ground support installation, monitoring and assessment systems 4.4. Identify and evaluate management controls should unacceptable ground movement or slope instability occur
5. Establish the ground control and slope stability system	5.1. Establish exploration programs identifying geological features and characteristics impacting on ground control and slope stability 5.2. Establish methods of safe access and egress. 5.3. Establish systems and sequences of safe mining 5.4. Establish monitoring systems of ground movement and slope instability to warn, control operations and record events. 5.5. Establish a program, including systems and procedures to satisfy identified training requirements 5.6. Establish emergency response and evacuation plans and procedures in accordance with site requirements 5.7. Establish ***safe operating procedures*** and ensure incorporation into site documentation
6. Audit and review the effectiveness of the system	6.1. Monitor ground movement and slope stability measurements against defined acceptable standards for compliance with statutory and site requirements 6.2. ***Audit*** emergency response and evacuation plans and procedures for compliance with site requirements 6.3. Identify, assess and incorporate future site mining requirements into the planning procedures to maintain appropriate standard

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	of the ground control and slope stability system 6.4. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit 6.5. Regularly review performance of the ground control and slop stability system

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain surface mining ground control and slope stability systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information
- access, interpret and apply mine survey information
- access and analyse archival and historical failure information related to the mine
- interpret and apply mathematical and scientific theorems/laws related to ground control and slope stability
- perform mathematical calculations
- interpret and apply design criteria for ground control and slope stability systems
- interpret computer spreadsheets and mining systems modelling/simulations
- collect, collate and interpret mining data
- apply procedures for preparing technical procedures
- apply procedures for conducting enquiries/investigations and preparing reports
- apply effective communications
- access and interpret data from monitoring systems and equipment
- analyse and report on ground control and slope stability system training needs
- apply risk management processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain surface mining ground control and slope stability systems:

- audit methodologies
- exploration techniques
- factors of safety
- ground support methods and systems
- legislative and statutory requirements for mining structures including mine plans, ground support and safety management systems
- mine planning and design
- mine surveying
- mining and general engineering principles
- mining structure failure modes
- rock types and characteristics

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- slope stability criteria
- stress analysis including mining induced stress, vertical and horizontal stress tectonics
- systems of work
- the systems of mining including ore body development
- training systems
- emergency response and evacuation planning processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishment and maintenance of surface mining ground control and slope stability systems • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of surface mining ground control and slope stability systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of systems that best meet the required outcomes • working with others to establish and maintain surface mining ground control and slope stability systems • consistent and timely establishment and maintenance of surface mining ground control and slope stability systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of surface mining ground control and slope stability systems that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and

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	complete surface mining ground control and slope stability systems • consistent and timely gaining of approval of surface mining ground control and slope stability systems • provision of clear, timely required support and advice on the implementation of surface mining ground control and slope stability systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mine site **historical information** may include:	• existence of previous workings within the mine • hydrology • over and underlying rock types • permeability of rocks and faults • physical property testing results of rock, overburden, underburden materials • seismic activity • sedimentology aspects of the mine site relating to subsidence • fissures and water sources • water pumped from mine
Resources may include:	• skilled personnel • bolts, cable and grout • face drilling equipment • power systems • mine services • special application equipment • budgetary requirements • geologists, hydrogeologists, geotechnicians, mine planners
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Geological and hydrogeological information includes that related	• direction and competency of faults • joints, cleats or other fractures

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to:	• induced collapse • intrusions and deformities • over and underlying rock types, inter-seams • permeability of rocks and faults • physical properties of all materials in ground, dump or slope • subsidence • fissures and water sources • weak zones within operating faces, permanent batters, dumping slopes
Stress includes:	• horizontal and vertical tectonic induced stress • mining induced stress • primary and secondary stress fields
Safe operating procedures are also known as:	• safe working procedures, standard operating procedures (SOP) and standard working procedures
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX603A Establish and maintain underground mining ground control and stable mining systems

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining ground control and stable mining systems in underground metalliferous mines. It includes: identifying and evaluating the criteria, the geological and geotechnical information, the mining engineering principles and practices, and control options for the system; establishing the system; and auditing and reviewing the effectiveness of the system.

Application of the Unit

This unit covers the application of the principles of mine design to the establishment and ongoing development of stable mining systems. It is appropriate for those working in a management or technical specialist role, in underground operations within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and evaluate the criteria	1.1. Access, interpret and apply ***compliance documentation*** relevant to ground control and stable mining systems in underground metalliferous mines 1.2. Identify, collect, access and interpret mine survey data in accordance with statutory and site requirements 1.3. Identify and record the necessary ***resources*** required to create and maintain a ***stable mining structure*** 1.4. Identify, evaluate and record ***historical information*** relating to the mine site 1.5. Identify, assess and record all possible mining structure failure modes relevant to the mine site 1.6. Establish the criteria for establishing the quantitative stability of mining structures 1.7. Analyse the ***risks*** associated with unstable mining structures 1.8. Identify and assess the limitations and controls applying to ***design*** of stable mining structures
2. Identify and evaluate geological and geotechnical information	2.1. Identify and evaluate exploration techniques 2.2. Identify and evaluate ***geological*** structures 2.3. Identify and evaluate ***hydrogeological*** features 2.4. Identify and evaluate hanging wall, foot wall, ore body characteristics and physical properties 2.5. Identify and evaluate ***stress*** regimes
3. Identify and evaluate mining engineering principles and practices	3.1. Identify and evaluate ***mining system*** types and methods 3.2. Identify potential layouts for stable mining structures from engineering analysis 3.3. Identify and evaluate mining constraints impacting on the development of *a* stable mining structure 3.4. Identify and evaluate equipment requirements, appropriate for the

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	development and maintenance of a stable mining structure
4. Identify and evaluate control options	4.1. Identify and evaluate ground support systems 4.2. Identify and evaluate ground support installation, ***monitoring*** and assessment systems 4.3. Identify and evaluate causes and impacts of failure mechanisms 4.4. Identify and evaluate natural and induced stress control methods
5. Establish the system	5.1. Design and establish exploration programs identifying geological features and characteristics impacting on mining operations 5.2. Design and establish methods of entry 5.3. Design and establish systems of mining 5.4. Design and establish sequences for mining operations 5.5. Design and establish system specifications and documentation 5.6. Establish a program, including systems and procedures to satisfy identified training requirements 5.7. Establish emergency response and evacuation plans and procedures in accordance with site requirements 5.8. Establish ***standard operating procedures*** and incorporate into site documentation
6. Audit and review the effectiveness of the system	6.1. ***Audit*** stable structure standards for compliance with statutory and site requirements 6.2. Audit mine survey data for compliance with statutory and site requirements 6.3. Audit monitoring systems for compliance with statutory and site standards 6.4. Audit recording systems for compliance with statutory and site requirements 6.5. Audit system maintenance program and procedures for compliance with statutory and site requirements 6.6. Audit emergency plans for compliance with statutory and site requirements

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	6.7. Audit the stable mining structure training program for currency, relevance and compliance with the site requirements 6.8. Audit emergency response and evacuation plans and procedures for compliance with site requirements 6.9. Identify and assess future site mining requirements and standards and incorporate into the planning procedures as stipulated by the ground control and stable mining structure system 6.10. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain ground control and stable mining systems in underground metalliferous mines:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information
- access, interpret and apply mine survey information
- access and analyse archival and historical failure information related to the mine
- interpret and apply mathematical and scientific theorems/laws related to stable mining systems
- perform mathematical calculations
- interpret and apply design criteria for stable mining systems
- interpret computer spreadsheets and stable mining systems modelling/simulations
- collect, collate and interpret mining data
- apply procedures for preparing technical procedures
- apply procedures for conducting enquiries/investigations and preparing reports
- apply effective communications
- access data from monitoring systems and equipment
- analyse and report on stable mining systems training needs
- apply risk management processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain ground control and stable mining systems in underground metalliferous mines:

- legislative and statutory requirements for mining structures including mine plans, ground support and safety management systems
- mine planning and design
- the systems of mining including drives, cross-cuts, rises, winzes, declines, inclines, shafts and ore body development
- stress analysis including mining induced stress, vertical and horizontal stress tectonics
- rock types and characteristics including subsidence, faults and fissures, permeability of rock types, hydrology, physical property testing, caving characteristics, windblast and hanging wall and foot wall conditions
- systems of work including mining and extraction such as pillar recovery and the use of various types of fill material

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- mining structure failure modes
- exploration techniques
- mining and general engineering principles relevant to the behaviour of excavations in rock
- ground support methods and systems
- audit methodologies
- pillar design criteria:
- pillar stress/strain/strength/ratios
- width/height ratios
- roof support design criteria
- Mohr's Circle
- Young's Modulus
- Poisson's Ratio
- stress distribution diagrams
- factors of safety
- mine surveying

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing and maintaining of ground control and stable mining systems in underground metalliferous mines • implementation of procedures and techniques for the safe, effective and efficient establishing and maintenance of ground control and stable mining systems in underground metalliferous mines • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of systems that best meet the required outcomes • working with others to establish and maintain ground control and stable mining systems in underground metalliferous mines • consistent and timely establishing and maintenance of ground control and stable mining systems in underground metalliferous mines
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of systems that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to establish and maintain ground control and stable mining systems in underground metalliferous mines • consistent and timely gaining of approval of ground control and stable mining systems in underground metalliferous mines • provision of clear, timely required support and advice on the implementation of ground control and stable mining systems in underground metalliferous mines
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Resources may include:	• skilled personnel • bolts, cable and grout • face drilling equipment • power systems • mine services • special application equipment • budgetary requirements
Stable mining structure controls include:	• mine opening dimensions • pillar sizes • influences of stresses and depth • strength of rock types • stress regimes and base characteristics • rock characteristics • competency of fill • system of mining • sequence of mining • competency of ground support • direction of mining • stress shadow area • faults and fissures
Mine site **historical information** may include:	• caving characteristics • existence of previous workings within the mine • hanging wall and footwall data • hydrology

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	• mass blasts • over and underlying rock types • permeability of rocks and faults • physical property testing results of rock types • rockburst and seismic activity • sedimentology aspects of the mine site relating to subsidence • sulphide dust explosions • underground fissures and water sources • water pumped from mine
Risk is:	• The chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Mine **design** is the process of:	• engineering analysis applied to the systems and sequences involved in mining
Mine **design** may include in whole or in part requirements relating to:	• cross-cuts • declines/inclines • drives • fault monitoring • geology • hanging wall and foot wall technical data • legislative and statutory requirements • mine drainage • mine plant • mining induced stress • modelling • multiple ore bodies • ore grades • outburst • over and underlying rock types • partial extraction • pillar extraction • sequencing • shaft pillar • shaft sinking and shaft location • spontaneous combustion • stone drivage • subsidence • sulphide content of ore • ventilation • windblast
Geological and hydrogeological	• caving characteristics

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information includes that related to:	• direction and competency of faults or inliers • hanging wall and foot wall • induced collapse • intrusions and deformities • over and underlying rock types • permeability of rocks and faults • physical properties • subsidence • sulphide content of ore • underground fissures and water sources • windblast
Stress includes:	• horizontal and vertical tectonic induced stress • mining induced stress • primary and secondary stress fields
Mining systems and methods may include:	• cut and fill • mechanised cut and fill • shrinkage stoping • sub-level stoping • open stoping • bench stoping • panel stoping • pillar extraction • caving methods • post pillar • slots mining
Monitoring of activities may include:	• review of written reports • performance appraisal • auditing procedures
Standard operating procedures (**SOP**) are also known as:	• safe working procedures, safe operating procedures and standard working procedures
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

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Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX604A Establish and maintain surface product haulage and transport systems

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining surface product haulage and transport systems in coal and metalliferous mining ad extractive industries surface. It includes: developing the systems and selecting equipment; establishing installation and commissioning procedures, systems for the operation and maintenance of the systems and equipment, and establishing systems for audit and review of the systems and equipment.

Application of the Unit

This unit is appropriate for those working in a management or technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop the systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to product haulage and ***transport systems*** 1.2. Identify the requirements for, and purpose of product haulage and transport systems in accordance with the system of mining or extraction 1.3. Identify systems options from an analysis of all relevant technical, operational and financial information 1.4. Develop a ***specification*** for the system from a comprehensive analysis of site needs 1.5. Select preferred systems options on the basis of performance against criteria
2. Select equipment for the systems	2.1. Identify the requirements for and purpose of product haulage and transport equipment against systems requirements 2.2. Conduct a detailed scoping of the work requirement and develop key selection criteria, including ***hazard*** identification and ***risk*** analysis 2.3. Develop a specification for the required product haulage and/or transport equipment 2.4. Select the preferred equipment solutions on the basis of performance against criteria
3. Establish installation and commissioning procedures	3.1. Establish procedures to identify hazards and analyse and evaluate risks associated with the installation of product haulage and transport systems and equipment 3.2. Develop and establish procedures for integrating new and existing site product haulage and transport systems and processes 3.3. Develop safe operating procedures and rules from a detailed analysis of legislative and work site requirements 3.4. Develop and establish product haulage and transport systems and equipment installation and commissioning procedures 3.5. Establish a program, including systems and procedures, to satisfy identified product

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	haulage and transport systems ***training*** requirements 3.6. Establish emergency response and evacuation ***plans*** and procedures in accordance with site requirements
4. Establish systems for the operation and maintenance of the systems and equipment	4.1. Develop operational procedures for product haulage and transport systems and equipment and incorporate into ***site documentation*** 4.2. Develop ***maintenance*** procedures for product haulage and transport systems and equipment from site and legislative requirements, and incorporate into site documentation 4.3. Develop and establish procedures for reviewing and modifying work processes
5. Establish systems for audit and review of the systems and equipment	5.1. Establish procedures to evaluate and confirm system/equipment compliance with statutory and site requirements 5.2. Identify and assess future product haulage and transport systems and equipment requirements and incorporate into ***planning*** processes 5.3. Establish procedures to confirm the currency of and compliance with product haulage and transport maintenance and ***safety standards*** 5.4. Establish the system of recording and reporting product haulage and transport equipment information 5.5. Establish procedures for incorporating feedback into the ***audit***/review system 5.6. Establish procedures to confirm the currency, relevance and compliance with the training program against identified requirements 5.7. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit 5.8. Audit emergency response and evacuation plans and procedures for compliance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish surface product haulage and transport systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
- technical information
- provide briefings and handover details
- assess the risks and consequences attached to product haulage and transport systems and equipment
- apply procedures for developing systems and equipment management procedures
- apply procedures for planning and coordinating work
- identify training needs related to product haulage and transport systems
- interpret and apply manufacturer's instructions
- apply procedures for conducting maintenance surveys

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish surface product haulage and transport systems:

- audit review processes and techniques
- computer based systems
- emergency response and evacuation planning processes and techniques
- fire fighting systems and precaution rules
- geological structures
- legislative and statutory requirements and instructions including transport rules, maintenance schemes, standard operating procedures, training, battery charging, positioning of fuel depots, conveyor belts
- maintenance surveys
- mine design relating to product haulage and transport systems and equipment
- site operation procedures
- site plans
- site reporting procedures
- power sources including electrical, hydraulic, pneumatic, diesel
- product haulage and transport systems and equipment statutory inspection requirements

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- product haulage and transport systems equipment management requirements
- product haulage and transport equipment and systems; the types, uses, characteristics and limitations appropriate for safe operation at the site
- risk management procedures
- safety design features of product haulage and transport systems
- site environmental monitoring requirements
- specification design criteria including noise, dust, lighting, ergonomics, remote control, physical clearance, confined space, visibility, seating vibration and machine equipment and personal protection
- stores system
- training and assessment systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establish and maintenance of surface product haulage and transport systems • implementation of procedures and techniques for the safe, effective and efficient establishing and maintenance of surface product haulage and transport systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of systems that best meet the required outcomes • working with others to establish and maintain surface product haulage and transport systems • consistent and timely establishing and maintenance of surface product haulage and transport systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain surface product haulage and transport systems
	  • consistent and timely gaining of approval of

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	surface product haulage and transport systems • provision of clear, timely required support and advice on the implementation of surface product haulage and transport systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Transport systems include capacities for personnel, equipment/materials and product and may include:	• wheeled, including:
	  • rubber tyred man transport
	  • multipurpose vehicles
	  • forklifts
	  • front end loader
	  • skid steer loader
	• railed, including:
	  • locomotives (electric/diesel)
	  • rolling stock
	• skidded
	• water borne
	• pipeline, including:
	  • batching stations
	  • dewatering systems
	  • water reticulation pumping station
	• conveyor system, including:
	  • conveyor belts
	  • drive heads
	  • tail ends transfer points
	  • surge bins
	  • fabricated bins

Specifications may include:	• performance requirements • costs • dimensions

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	• capacity • safety and health requirements • training requirements • key selection criteria
Hazards are:	• a source of potential harm or a situation with a potential to cause loss
Risk is:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood.
Maintenance may be divided into:	• predictive • preventive • breakdown
Planning may include:	• interpreting and communicating information • business/performance plans • location • tender specifications • resources • statutory/legal/organisational requirements and control • resource parameters • best practice • technical standards established by industry and/or enterprise • planning approvals • surveying • infrastructure/technology requirements and would typically incorporate the following specifications: • products • production rate • recyclable materials • hours per week of operation • waste and stockpiles • water management • transportation systems • safety and health/environmental • all weather dust and noise levels/controls access/haul roads
Site documentation and training policy may include:	• statutory and legislative requirements • management plans and procedures
Safety standards may be	• legislation and regulations • relevant international/Australian standards

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contained in:	• management plans • health and safety policy • code of practice • industry guidelines • approved standards • manufacturer's instructions • standard operational procedures • job instructions (or equivalent)
Audit mine is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Unit Sector(s)

Materials Extraction

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMEX605A Establish, implement and maintain operational management plans

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing, implementing and maintaining operational management plans in resources and infrastructure industries. It includes: identifying and measuring satisfaction levels of internal/external customers; measuring current operational processes for quality and efficiency; interpreting strategic goals to determine operational implications; developing operational plans to enable the achievement and improvement of strategic goals.

Application of the Unit

This unit is appropriate for those working in a management or technical specialist role, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and measure satisfaction levels of internal/external customers	1.1. Access, interpret and apply ***compliance documentation*** relevant to operational ***management*** plans 1.2. Identify internal and external customers and establish their requirements 1.3. Analyse various formal and informal methods of measuring customer satisfaction 1.4. Develop appropriate ***strategies*** and plans to measure customer satisfaction levels 1.5. Communicate feedback from customers to all areas which may benefit from the information 1.6. Monitor trends in customer satisfaction levels to seek opportunities for improvement
2. Measure current operational processes for quality and efficiency	2.1. Identify the key performance indicators (KPIs) influencing quality and efficiency of specified processes 2.2. Identify and analyse parameters of desired performance 2.3. Use information on current practices and performance to identify opportunities for improvements in quality and productivity 2.4. Communicate recommendations so that improvement plans can be developed
3. Interpret strategic goals to determine operational implications	3.1. Know and understand the organisation's current strategic goals 3.2. Interpret strategic plans to identify implications for own site 3.3. Undertake risk ***analysis*** of strategic plans to establish implications for own site 3.4. Undertake ***consultation*** with appropriate people to ensure that the full implications of the organisation's strategic goals on the site are known 3.5. Ensure that the strategic role of the site operations within the total business system is communicated to relevant personnel
4. Develop operational plans to enable the achievement and	4.1. Analyse operations to identify improvements required to achieve the

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improvement of strategic goals	strategic goals 4.2. Establish communication processes to report the progress and any problems occurring with the implementation of operational plans 4.3. Formulate and deploy action plans which detail site goals, ***resource*** requirements, priorities and timelines 4.4. When anticipated improvements are unachievable analyse the causes and make appropriate adjustments 4.5. Review and use the outcomes of improvements for further learning and continuous improvement

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish, implement and maintain operational management plans:

- apply legislative, organisation and site requirements and procedures
- identify the aspects of the site and their relationship to the environment
- identify possible reasons for failure in site performance
- relate goals and actions to the strategic aims of the site
- identify the vision of the future of the site
- identify the relationship between proposed goals and actions and the strategic aims of the site
- apply opportunities to achieving longer-term aims or needs of site
- apply ethical principles to proposed objectives and the create an ethical cultures
- identify the interests of stakeholders and their implications for the site and individuals
- identify and raise ethical concerns relevant to the site
- work towards the resolution of ethical dilemmas based on reasoned approaches
- communicate a vision which generates excitement, enthusiasm and commitment
- listen actively, ask questions, clarify points and rephrase others' statements to check mutual understanding
- adopt communication styles appropriate to listeners and situations, including selecting an appropriate time and place
- present yourself positively to others
- create and prepare strategies for influencing others
- demonstrate an understanding of the culture of the site and act to work within it or influence it
- establish information networks to search for and gather relevant information
- make use of existing sources of information
- seek information from multiple sources
- break processes down into tasks and activities
- identify patterns or meaning from events and data which are not obviously related
- produce a variety of solutions before taking a decision
- take decisions which are realistic for the situation

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish, implement and

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maintain operational management plans:

- strategic planning
- statutory and site rules, policies, procedures and regulations
- critical path analysis and planning methods and techniques
- corporate planning model and techniques
- risk management processes and techniques
- industrial awards/enterprise agreements
- OHS
- advanced negotiation techniques
- organisational change and development
- assertive techniques
- action planning methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing, implementing and maintaining operational management plans • implementation of procedures and techniques for the safe, effective and efficient establishing, implementing and maintaining of operational management plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to establish, implement and maintain operational management plans • consistent and timely establishing, implementing and maintenance of operational management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish, implement and maintain operational management plans
	  • consistent and timely gaining of approval of

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	operational management plans • provision of clear, timely required support and advice on the implementation of operational management plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Management operates within:	• work schedules may include shift work and varying hours of duty • environments ranging from simple to complex and diverse • appropriate policies, guidelines and processes • a level of autonomy which may range from limited to substantial • quality and continuous improvement processes and standards • business and performance plans • ethical standards established by the organisation • productivity and profitability objectives and targets • best practice and benchmarking principles and practices • legislation, code and practices • resource parameters which may be defined or negotiated • training and development principles and practices • human resource policies and practices including interviewing, counselling, dispute settling and discipline • financial accountability including profit and loss statements • enterprise/industrial agreements/awards

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Management may assume varying roles including:	• leader • coach/facilitator • mentor • participant • director • trainer • assessor
Management will typically make decisions to:	• maintain statutory/legal compliance • influence operational performance • plan production schedules • maximise production and minimise operating costs/risks and non-conformances • analyse and review market/production predictions and costs • manage projects and tasks
Strategies are:	• plans which will guide the site in achieving its objectives
Analysis is:	• the process of organising and interpreting information so that conclusions can be drawn; methods may be formal and planned, or informal and *ad hoc*
Consultation is:	• asking others for their views and involving them openly in decision making
Consultation may typically include:	• regulatory authorities • tenderers/project managers • contractors/employees • community • customers • suppliers
Resources may include:	• people • finance • equipment • environment • buildings/facilities • technology/information

Unit Sector(s)

Materials Extraction

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPG201A Connect and disconnect refer units

Modification History

Not applicable.

Unit Descriptor

This unit covers the connection and disconnection of reefer units in the metalliferous mining industry. It includes plugging/unplugging reefer units to power sources, and attaching/detaching clips on units. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plug/unplug reefer units to power source	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plug/unplug reefer units safely according to ***workplace procedures*** 1.3. Identify problems with the operation of reefer units and report to appropriate personnel 1.4. Check that reefer unit is running after being plugged in 1.5. Identify and report faulty units 1.6. Unplug reefer unit and clear cable from unit
2. Attach/detach clip on units	2.1. Attach/detach clip on units safely in accordance with relevant code of practice 2.2. Select personal protective equipment appropriate for work activities 2.3. Confirm connection to container or crib 2.4. Identify problems with the operations of clip on units and report to appropriate personnel

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to connect and disconnect reefer units:

- apply legislative, organisation and site requirements and procedures for connecting and disconnecting reefer units
- establish plans
- describe consequences
- complete tasks
- identify improvements
- apply safety precautions relevant to the task
- assess operational capability of equipment used and work processes selected

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to connect and disconnect reefer units:

- site layout and location of reefer units
- identifying problems in the operations of reefer units
- focus of operation of work systems, equipment, management and site operating systems
- relationships and requirements of work and operating systems in respect of related systems
- impact of job on enterprise and individual performance
- application of relevant industrial requirements and legislative requirements
- identification and correct use of equipment, processes and procedures
- identify reefer units requiring clip on units
- identifying problems in the operation of reefer units
- identifying cargo using marking and number systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for connecting and disconnecting reefer units • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of reefer unit connection and disconnection • working with others to undertake and complete the connection and disconnection of reefer units that meets all of the required outcomes • consistent timely completion of reefer unit connection and disconnection that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the connection and disconnection of reefer units

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Workplace procedures may include:	• hazard policies and procedures including code of practice • issue resolution procedures • job procedures and work instructions • relevant guidelines relating to the use of machinery and equipment capability and limitations, tagging of unserviceable or damaged items • quality procedures (where required) • security procedures • following enterprise housekeeping processes • waste, pollution and recycling management processes • action taken promptly, accidents and incidents reports in accordance with statutory requirements and enterprise procedures • recognise and adapts appropriately to cultural differences in the workplace, including modes of behaviour and interaction among staff and others • work completed systematically with attention to detail without damage to goods, equipment or personnel
Worksite environment may include:	• operations conducted by day or night • work conducted in restricted spaces or exposed conditions or controlled or open environments

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	• exposure to chemicals, dangerous or hazardous substances and movements of equipment, goods and vehicles • personnel in work area may include personnel, site visitors, contractors, official representation
Sources of information/documents may include:	• goods identification numbers and codes • manifests, bar codes, goods and container identification • manufacturer's specifications • enterprise operating procedures and policies • supplier and/or client instructions • materials safety data sheet • phone, electronic data interchange, fax, e-mail, internet, radio, oral, aural or signed communication • code of practice including the national standards for material handling and the industry safety code • legislation, regulations and related documentation • awards, enterprise bargaining agreements and other industrial agreements • standards and certification requirements • quality assurance procedures
Workplace context may include:	• work organisation procedures and practices
Conditions of service, **legislation and industrial agreements** including:	• workplace agreements and awards/OHS • state, federal or territory legislation
Applicable State/Territory/Commonwealth regulations and legislation may include:	• OHS • workplace relations • workers compensation • water and road use and license arrangements • dangerous goods and air freight regulations • export/import/quarantine/bond requirements • marine orders • environmental protection legislation • emergency procedures

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Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPG301A Control and monitor automated plant/machinery

Modification History

Not applicable.

Unit Descriptor

This unit covers the control and monitoring of automated plant/machinery in the metalliferous mining industry. It includes applying control and data acquisition systems, controlling and monitoring plant/equipment with control and data acquisition systems, fault finding and correcting routine and non routine mine control and data acquisition system operation and maintenance problems, and maintaining mine control and data acquisition systems and associated accessories. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply control and data acquisition systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Maintain safe work practices 1.3. Identify, manage and report potential risks, hazards, accidents and injury according to site reporting procedures, safety guidelines and SOPs 1.4. Communicate/report safety issues and work area hazards and end of shift report to the incoming shift 1.5. Identify and log safety issues and hazards as they occur according to site SOPs 1.6. Report safety issues and hazards as they occur and are reported to the Team Leader and/or appropriate personnel according to SOPs 1.7. Select and use appropriate PPE according to procedures and manufacturers' guidelines 1.8. Respond appropriately to emergency procedures 1.9. Perform cleaning/housekeeping of plant and area and report associated hazards 1.10. Operate and communicate via UHF radio control methods in the underground and surface areas according to SOPs 1.11. Report and rectify/isolate defective equipment according to site isolation and tagging procedure 1.12. Raise barricades and signs around hazardous areas and report to control and data acquisition system and/or relevant personnel 1.13. Maintain ***environmental requirements*** according to Company/site ***environmental*** policy
2. Control and monitor plant/equipment with control and data acquisition system	2.1. Plan and prepare for control and data acquisition system and ***closed circuit television*** operation according to SOPs 2.2. Perform control and data acquisition system control and control room pre operation and visual checks according to

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	SOPs 2.3. Start-up and log onto control and data acquisition system to operate ore handling system and equipment according to manufacturer's specifications and SOPs 2.4. Monitor the ore handling system, equipment operation and personnel safety through control and data acquisition system and closed circuit television 2.5. Communicate to technicians, team leaders and/or supervisors when staring or shutting down ore handling systems and equipment according to standard communication practice and site SOPs
3. Fault find and correct routine and non routine mine control and data acquisition system operational and maintenance problems	3.1. Identify and correct minor deviations of equipment systems normal operating parameters according to manufacturers' specifications and SOPs 3.2. Follow emergency shutdown procedures according to SOPs 3.3. Report abnormal conditions to control room/system and/or supervisory staff 3.4. Isolate and tag mine control and data acquisition system equipment and associated accessories before conducting maintenance according to site isolation and tagging procedure
4. Maintain mine control and data acquisition system and associated accessories	4.1. Conduct routine planned inspections, preventative maintenance as per maintenance schedules, SOPs and safe working practices 4.2. Perform cleaning/housekeeping of plant and area and report associated hazards 4.3. Complete all necessary ***documentation*** according to site reporting procedures 4.4. Notify technicians, team leader and/or supervisors of any abnormal operational conditions within mine as per site SOPs

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to control and monitor pant/machinery

- apply legislative, organisation and site requirements and procedures for controlling and monitoring automated plant/machinery
- initiate work clearance
- use PPE and safeguards
- work to industry, community and environmental standards
- apply knowledge of mine emergency procedures and alarms
- apply standards to work operations
- plan work sequence for a given job
- employ prescribed safe work practices
- monitor ore transfer systems
- participate in team activities
- undertake hygiene/house keeping tasks
- solve problems in electrical circuits
- solve problems and adjust controls
- access and use engineering drawings
- operate automatic ore handling equipment
- operate manual ore handling equipment
- prepare documentation
- work in a team
- write technical reports
- maintain equipment records
- diagnose problems
- apply environmental constraints and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to control and monitor automated plant/machinery

- OHS
- hazardous standards
- plant/machinery operating principles and practices
- site agreements

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- legislative regulations
- DC circuit principles
- storage
- equipment protection (mechanical, electrical)
- power supplies
- electrical circuit control principles
- material handling control principles
- programmable controllers
- electrical distribution
- electrical accessories
- measurement concepts
- detection sensors
- cables and wiring systems
- circuit protection
- final control elements
- transmitters and converters
- distributive control
- solving problems associated with material
- interpretation of engineering drawings
- material handling control networks and associated accessories

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for controlling and monitoring automated plant/machinery • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of automated plant/machinery control and monitoring • working with others to undertake and complete the control and monitoring of automated plant/machinery that meets all of the required outcomes • consistent timely completion of automated plant/machinery control and monitoring that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the control and monitoring of automated plant/machinery

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Control room **control and data acquisition system** and associated equipment may include:	• conveyor controls (motor control centre) • over head magnet • winder control • electrical distribution switch gear control • crusher control • loading station feeders • air conditioning control • ventilation system control • mine dewatering control • lighting control • fire/dust suppression control • sirens and alarms • ore car dumping
Control and data acquisition system hardware may include:	• monitors • reports • bay boards • mouse • 2-way radio • battery charging racks • telephone • First Aid kit • fire extinguisher
Closed circuit television equipment may include	• video monitors • CCTV control panel • video cameras

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Environmental requirements may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • recycling e.g. water • run off • spills • waste management and disposal • water quality
Documentation may include:	• work orders • end of shift reports • logs • registers • team leader's daily report • information sheet • computers and computer software
Legislation may include:	• Australian standards • environmental agencies regulations • Environmental Protection Act • isolation procedures • manufacturer's specifications/recommendations • Mine Regulations Act • OHS legislation • site regulations and procedures

Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO201A Operate roller/compactor underground

Modification History

Not applicable.

Unit Descriptor

This unit covers operating rollers and/or compactor in underground metalliferous mines. It includes: planning and preparing for operations; compacting material; and carrying out operator maintenance and housekeeping activities.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, in underground operations, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to operating ***rollers and compactors*** in underground metalliferous mines 1.2. Receive, interpret and clarify shift changeover details 1.3. Select personal protective equipment appropriate for work activities 1.4. Select appropriate type of equipment according to job type and specifications to maximise efficiency and effectiveness of work activities 1.5. Perform equipment ***pre-start checks*** 1.6. Inspect and assess site conditions to determine if scaling is required and take action according to site requirements 1.7. Identify, address and report potential hazards and risks 1.8. Carry out ***start-up procedures*** 1.9. Identify, address and report ***environmental issues*** 1.10. Adhere to emergency procedures in case of fire and/or accident 1.11. Use approved ***dust suppression and extraction methods*** 1.12. Ensure area is well ventilated before entry into work area
2. Compact material	2.1. Operate equipment safely within work environment, limitations and road conditions, observing ***safe driving conventions*** 2.2. Identify, remove and dispose of ***contaminants*** 2.3. Communicate with other equipment operators and personnel using approved communication methods 2.4. Monitor and manage ***equipment performance*** using appropriate ***indicators*** to aid efficient operations 2.5. Maintain safety of site by implementing

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	appropriate safety provisions 2.6. Complete all required documentation clearly, concisely and on time 2.7. Pass on end of shift information to oncoming shift
3. Carry out operator maintenance	3.1. Visually inspect equipment and find faults according to manufacturer's specifications and site requirements 3.2. Service and make minor adjustments to equipment 3.3. Conduct routine operational servicing to ensure peak performance of equipment
4. Conduct housekeeping activities	4.1. ***Clean*** equipment to maintain condition of equipment and ensure safe and efficient operations 4.2. Clean and store auxiliary service equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to operate rollers and/or compactors in underground metalliferous mines:

- apply legislative, organisation and site requirements and procedures
- interpret ground conditions
- apply safe work practices
- apply procedures for operating, maintaining and cleaning equipment
- use hand and power tools
- apply safe and effective driving techniques
- apply towing requirements and procedures
- apply vehicle refuelling requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to operate rollers and/or compactor in underground metalliferous mines:

- compacting procedures
- environmental procedures
- equipment parking
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data (basic)
- hazardous goods procedures (handling and transport)
- isolation procedures
- manufacturer's specifications
- mining regulations
- operational procedures and checks
- primary and secondary ventilation
- site procedures
- start-up and shutdown procedures
- surface maintenance techniques
- underground procedures
- driving regulations, rules and conventions
- towing methods
- vehicle refuelling procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating rollers and/or compactor in underground metalliferous mines • implementation of requirements, procedures and techniques for the safe, effective and efficient operating of rollers and/or compactor in underground metalliferous mines • working with others to operate rollers and/or compactor in underground metalliferous mines that meets all of the required outcomes • consistent timely operating of rollers and/or compactor in underground metalliferous mines that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to operate rollers and/or compactor in underground metalliferous mines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Rollers and compactors may include:	• rollers • tractors • dozer • front end loader with roller • smooth drum • vibrating • multi tyred • grid • sheep foot
Start-up procedures may include:	• correct location of equipment • safety mechanisms operational (horn, operating lights) • vehicle is left secured
Environmental issues may include:	• dust • fumes • noise • water
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Materials may include:	• geo textiles materials • gravel • ore

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	• overburden • oxidised waste • rejects • road base • rubbish • sand • sulphide rock fill • tailings
Safe driving conventions may include:	• speed limits • mine lighting • site vehicle identification lights • right of way • parking in stockpiles • parking on incline/decline • refuelling procedures • rules at intersections • driving regulations, rules and conventions • towing methods
Contaminants may include:	• cigarette butts • consumables • ear plugs • explosives • metal bucket teeth • metal or steel rods • old piping • old workings • plastic • timber • wet fill
Equipment performance may be affected by:	• duration of operation • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations
Indicators may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • fuel filter • parking brake • retarder

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	• service meter • speedometer/odometer • steering filters • tachometer • torque converter oil temperature • transmission filter • voltmeter/ ammeter • water temperature
Operational servicing may include:	• checking fluid levels • filter changing • greasing • keeping cab clean • tightening loose fittings
Cleaning methods may include:	• degreasing • forced air • steam cleaning • vacuum • water

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO202A Undertake towing underground

Modification History

Not applicable.

Unit Descriptor

This unit covers undertaking towing in underground metalliferous mines.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, underground operations within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for towing	1.1. Access, interpret and apply ***compliance documentation*** relevant to towing in underground metalliferous mines 1.2. Receive, interpret and clarify shift changeover details 1.3. Select personal protective equipment appropriate for work activities 1.4. Select appropriate type of ***towing equipment*** according to job type and specifications to maximise efficiency and effectiveness of work activities 1.5. Perform equipment ***pre-start checks*** 1.6. Carry out start-up procedures 1.7. Identify, address and report ***potential hazards and risks*** 1.8. Communicate with other equipment operators and personnel using approved communication methods 1.9. Identify, address and report ***environmental issues*** 1.10. Adhere to ***emergency procedures*** in case of fire and/or accident 1.11. Use approved ***dust suppression and extraction methods*** 1.12. Ensure area is well ventilated before entry into work area
2. Shackle and hitch vehicle/equipment	2.1. Identify towing/lifting points on vehicle/equipment 2.2. Select suitable towing equipment for type and size of vehicle/equipment 2.3. Hitch towing equipment to vehicle/equipment using approved method 2.4. Confirm security and balance of hitch prior to commencing tow
3. Tow and unhitch vehicle/equipment	3.1. Follow vehicle and site procedures for towing observing ***safe driving conventions*** 3.2. Monitor condition of ground and hitch and adjust towing accordingly 3.3. Proceed to destination by most direct route 3.4. Unhitch vehicle/equipment in authorised

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	area using approved methods 3.5. Complete all required documentation clearly, concisely and on time 3.6. ***Clean towing vehicle*** and associated equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to Undertake towing underground:

- apply legislative, organisation and site requirements and procedures
- apply procedures for assessing towing options for vehicle/equipment
- apply hazard identification procedures
- apply procedures for operating and maintaining equipment
- use hand tools and equipment
- apply vehicle driving techniques
- apply vehicle refuelling requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to Undertake towing underground:

- mine operational system
- hitching systems
- towing procedures
- underground procedures
- geological and technical data
- equipment parking
- environmental procedures
- equipment safety requirements
- start-up and shutdown procedures
- operational procedures and checks
- equipment processes, technical capability and limitations
- manufacturer's specifications
- emergency procedures
- driving regulations, rules and conventions
- vehicle refuelling procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for towing underground • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of towing underground • working with others to undertake and complete towing underground that meets all of the required outcomes • consistent timely completion of towing underground that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete towing underground

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Towing equipment may include:	• steel rope • shackles • couplers • hooks • ropes • rigid link • chains • blocks and wedges • jacks (hydraulic and mechanical) • truck mounted towing winch
Pre-start checks may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • cab condition (no rags in air conditioner vent, dirt around brake and accelerator pedals, seat condition, all gear secured) • cab mounts • computer systems • correct location of equipment • damage to equipment • danger tags • display instrumentation and gauges (indicators, gauges, laser levels) • emergency brake checks • emergency steering • engine and stop engine lights (orange and red) • fire suppression unit (pins in position in

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	triggers)
	• fluid leaks (oil/fuel/water - engine, transmission, hydraulic hoses, on ground, radiator, hoses)
	• fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel, transmission)
	• light positioning and cleanliness
	• no combustible material around exhaust
	• personal proximity
	• portable fire extinguisher (bracket, gauge, hose, ease of access)
	• radiator top up tank
	• safety mechanisms operational (horn, operating lights)
	• start-up, park and shutdown procedures may include:
	  • tyres and rim condition
	  • vehicle is left secured
	  • vehicle number
	  • visual and audio warning devices and lights
	  • wheel nuts and studs
	  • windows (clean, emergency exit tag in place)

Potential hazards and risks may include:	• adjoining pit walls • brake failure • break and steering failure • bund and/or wall collapse • clean floor • communication failure • decline traffic • discharge area may include: • fatigue • fire • fire on equipment • hydraulic line failure • level surface • mount dismount injuries • pot holes • road conditions • rocks

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	• spillage • stable ground • surface free of obstructions • unauthorised personnel • undercut brow • unsafe ground • visibility
Environmental issues may include:	• dust • fumes • noise • water
Emergency procedures may include:	• clean up • equipment shutdown procedures • evacuation procedures • First Aid • notification of authorities • safety equipment • use of personal protective equipment
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Safe driving conventions may include:	• speed limits • mine lighting • site vehicle identification lights • right of way • parking in stockpiles • parking on incline/decline • refuelling procedures • rules at intersections • driving regulations, rules and conventions
Cleaning methods may include:	• degreasing • forced air • steam cleaning • vacuum/ ammeter • water
Tow vehicles may include:	• wheel drive (diesel, electric) • wheel drive • articulated • rigid

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	• tipping or ejector tray

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO203A Support bucket wheel system operations

Modification History

Not applicable.

Unit Descriptor

This unit covers supporting bucket-wheel system operations in the coal mining industry. It includes: planning and preparing for support; operating the hopper and conveyor system; and maintaining the bucket-wheel support system.

Application of the Unit

These support operations include the positioning of the hopper to receive and discharge materials. This unit is appropriate for those working in a operational support roles, at surface mining operations within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for support	1.1. Access, interpret and apply ***compliance documentation*** relevant to the supporting bucket-wheel system operations 1.2. Obtain, interpret and clarify/confirm ***work requirements*** and ***shift details*** before proceeding 1.3. Access, interpret and apply ***geological and survey data*** required to complete the allocated work 1.4. Access and apply ***safety information and procedures*** throughout the work 1.5. Prioritise tasks in accordance with immediate system requirements
2. Operate hopper and conveyor system	2.1. ***Coordinate*** activities are resolved with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up and shutdown procedures 2.3. Operate controls 2.4. Relocate walking head in accordance with system requirements 2.5. Act on or report monitoring systems and alarms 2.6. Recognise and respond to ***hazardous and emergency situations*** 2.7. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment
3. Maintain the bucket-wheel support system	3.1. Carry out equipment inspections and fault-finding 3.2. Carry out authorised routine operational servicing, lubrication and housekeeping tasks 3.3. Carry out authorised minor maintenance 3.4. Provide authorised operator support during preparation for, and conduct of, major maintenance tasks 3.5. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to support bucket-wheel system operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access interpret and apply technical information
- apply hand-eye coordination
- apply procedures for working at heights
- apply diagnostic techniques
- use relevant hand tools
- apply environmental constraints in support operations
- apply equipment records maintenance requirements
- apply procedures for disposing of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to support bucket-wheel system operations:

- site and equipment safety procedures
- site bucket-wheel operational procedures
- bucket-wheel system equipment characteristics, technical capabilities and limitations
- bucket-wheel support operational procedures
- bucket-wheel maintenance systems and procedures
- hazard identification and response procedures
- site environmental requirements and constraints related to bucket-wheel support operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for supporting bucket-wheel system operations • implementation of requirements, procedures and techniques for the safe, effective and efficient support of bucket-wheel system operations • working with others to undertake and complete bucket-wheel system operations that meet all of the required outcomes • consistent timely supporting of bucket-wheel system operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete bucket-wheel system operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Shift details may include:	• nature and scope of the work • working conditions • achievement targets • site lighting arrangements • defects on equipment • hazards and potential hazards • coordination details
Geological and survey data must include safety factors relating to:	• natural fall • grades • levels • faults • slips • strata • drainage
Safety information and procedures may be contained in:	• legislation and regulation • relevant Australian standards • management plans • OHS policy • code of practice • manufacturer's instructions • safe working procedures (or equivalent) • specific safety requirements , including:

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	• boarding and disembarking procedures • identifying and confirming potential hazards • relocating • belt trimming • tracking and resetting • operational signal procedures
Coordination issues include:	• communication with personnel and an awareness of other support plant and equipment
Hazardous and emergency situations may include:	• sinking • spoil and highwall stabilisations • wet weather operation • electrical start-up and shutdown • belt system fires • electrical fires • windy and dusty conditions • working in close proximity to moving equipment and parts

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO204A Conduct conveyor shifting dozer operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting conveyor shifting dozer operations in the coal mining industry. It includes: planning and preparing for conveyor shift; operating dozer to shift conveyor; and parking and shutting down the dozer.

Application of the Unit

This unit is appropriate for those working in a mobile plant operator roles, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for conveyor shift	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***conveyor shifting*** dozer ***operations*** 1.2. Receive, interpret and clarify ***briefings or handover details*** 1.3. Select and inspect ***equipment*** in accordance with job and ***safety requirements*** 1.4. Interpret and apply geological ***conditions*** and ***survey data*** required to complete the shift 1.5. ***Inspect conveyor system*** for condition and report potential issues 1.6. Observe ***safety rules and regulations***
2. Operate dozer to shift conveyor	2.1. Carry out machine pre-start checks, start-up, park and shutdown procedures 2.2. Fit ***relevant attachments*** to dozer, including roller heads, ropes and shackles 2.3. Attach dozer rollers to conveyor rails, carry out rail warm ups 2.4. ***Shift conveyor*** singularly and/or with other machines in small passes 2.5. Operate dozer controls and manoeuvres smoothly to avoid damage to rail, fish plates, conveyor frames and pipelines 2.6. Conduct towing, winching and pushing 2.7. Conduct final alignment in accordance with survey markers and within site tolerances 2.8. Adjust operating techniques in extreme conditions to ensure safety of plant and personnel, and take necessary ***hazard*** control measures 2.9. Use and interpret hand signals and radio communications 2.10. Disconnect dozer attachments from conveyor 2.11. Complete work and report any damage

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3. Park and shutdown dozer	3.1. Park, shutdown, inspect and clean dozer 3.2. Remove and inspect for serviceability and damage and store attachments 3.3. Complete logs and reporting requirements

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct conveyor shifting dozer operations:

- apply legislative, organisation and site requirements and procedures
- apply dozer operating skills
- apply operational safety requirements
- access, interpret and apply technical information
- apply equipment records maintenance requirements
- apply hand-eye coordination
- use relevant hand tools
- apply diagnostic techniques
- apply environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct conveyor shifting dozer operations:

- legislative and regulatory requirements related to this competency
- site and equipment safety requirements and procedures
- scope and limitations of operations related to this competency
- site conveyor systems and relocation coordination requirements
- relevant conveyor system and equipment characteristics, technical capabilities and limitations
- mine site geological conditions and survey data
- fire suppression, fire alert and disaster plan procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting conveyor shifting dozer operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conveyor shifting dozer operations • working with others to undertake and complete conveyor shifting dozer operations that meets all of the required outcomes • consistent timely completion of conveyor shifting dozer operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conveyor shifting dozer operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Shift conveyor includes:	• constant monitoring for damage to rail and fish plates • maintaining communication with other machines and conveyor shift supervisor
Conveyor systems may vary in:	• distance • number of sections • transfer stations • shuttles
Operations may be conducted in all weather conditions, including extreme conditions by day or night and may include:	• hot and dusty • heavy rain/flood • fog and high wind
Briefings or handover details may include:	• conveyor shifting plan and program • work coordination requirements • worksite and formation inspection • location of potential hazards • permit and access requirements
Equipment may include:	• roller head attachments • slings and shackles • winch rope • towbar pin • track dozers • rigging equipment • specialist roller heads • hand and power tools

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	• spare parts • lubricants • cleaning products
Safety requirements may include:	• access and permit procedures • working in vicinity of other machines and other personnel
Conditions may include:	• stress relief • cracking • fire holes • aquifers • compacted coal • overburden
Survey data may include:	• mine site plans • survey belt centreline • offsets • survey marks
Inspect conveyor system may include:	• fish plates • rails and sleepers • towing and/or pushing points • frame braces
Safety rules and regulations may be contained in:	• legislation and regulations • relevant Australian standards • management plans • manager's rules • OHS Policy • code of practice • manufacturer's manuals and instructions • safe working or job procedures • training resources
Relevant attachments may include:	• roller heads • ropes • shackles • winch • tow
Hazards may include:	• power lines • overhead service lines • obstructions • structures • other equipment/vehicles • dangerous material • formation/earthworks/batters

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	• underground services • water

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO205B Operate roller/compactor

Modification History

Not applicable.

Unit Descriptor

This unit covers operating of roller/compactors in metalliferous mining operations. It includes: planning and preparing for operations; carrying out compacting; and conducting housekeeping activities.
Note: the title of this unit is Operate roller/compactor, it is displayed as Operate roller_compactor because the TGA content management system does not accept '/' as text.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, in surface operations within:

- Metalliferous mining
- Coal mining
-

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to operating of ***roller and compactors*** 1.2. Receive, interpret and clarify shift change over details 1.3. Select appropriate type of ***equipment and/or attachments*** according to job specifications and to maximise efficiency and effectiveness of work activities 1.4. Identify, address and report ***potential hazards and risks*** 1.5. Select personal protective equipment appropriate for work activities 1.6. Conduct equipment ***pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report ***environmental issues*** 1.8. Communicate with other personnel using approved communication methods 1.9. Adhere to emergency procedures to ensure safety of personnel, plant and equipment
2. Carry out compacting	2.1. Carry out ***start-up***, ***park and shutdown procedures*** 2.2. Operate equipment within recommended speed, engine capability and limitations 2.3. Manoeuvre equipment to maximise efficiency and ensure safety of other equipment and personnel 2.4. Assess ***materials*** and ***site conditions*** to determine appropriate operation technique 2.5. Remove or manage ***contaminants*** upon identification 2.6. Compact to required degree of compaction 2.7. Monitor equipment performance utilising appropriate ***indicators*** to aid efficient operations
3. Conduct housekeeping activities	3.1. ***Clean*** equipment 3.2. Clean and store attachments and other ancillary equipment 3.3. Complete all required records and

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	documentation accurately and promptly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to operate roller/compactors:

- apply legislative, organisation and site requirements and procedures
- engage and disengage compacting device
- operate under variable ground conditions and grades
- apply diagnostic techniques
- apply hazardous goods handling techniques
- interpret plans, reports, maps, specifications
- apply appropriate lifting techniques to remove items from path of plant
- apply work task organising procedures
- apply defect reporting requirements and procedures
- apply safe work practices
- apply troubleshooting techniques
- use communications equipment/use computer systems
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to operate roller/compactors:

- compacting procedures
- emergency procedures
- fatigue management
- environmental and heritage procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data
- hazardous goods procedures and consequences of spills
- isolation procedures
- mine operational system
- night and day working procedures
- OHS procedures
- open cut procedures
- operational procedures and checks
- road rules
- shutdown procedures

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- site procedures
- site safety requirements
- start-up procedures
- surface maintenance techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating roller/compactors • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of roller/compactors • working with others to undertake and complete the operation of roller/compactor that meets all of the required outcomes • consistent timely operation of roller/compactors that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the roller/compactors operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Rollers and compactors may include:	• dozer • front end loader where rollers are attached • rollers • tractors
Capacity of **equipment and/or attachments** may include:	• duration of operation • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations
Potential hazards and risks may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods) fires • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground • unstable faces • vehicles

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Pre-start checks may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • computer systems • display instrumentation and gauges (indicators, gauges, laser levels) • engine and stop engine lights (orange and red) • fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • visual and audio warning devices and lights
Environmental issues may include:	• culturally- sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality
Start-up, **park and shutdown procedures** may include:	• correct location of equipment • safety mechanisms operational (horn, operating lights) • vehicle is left secured
Materials may include:	• gravel • ore • overburden • oxidised waste • rejects • road base • rubbish • sand • sulphide rock fill • tailings • topsoil • water
Site conditions may include:	• broken ground • day and night • degree of compaction • location of water table • slope of working surface

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	• stable ground (compaction) amount of scale • wet and dry • working over old underground workings and voids
Contaminants may include:	• animal carcasses (sheep, cows, kangaroos) • cigarette butts • consumables • ear plugs • metal bucket teeth • metal or steel rods • old fencing • old piping • plastic • timber
Indicators may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • fuel filter • parking brake • retarder • service meter • speedometer/odometer • steering filters • tachometer • torque converter oil temperature • transmission filter • voltmeter • water temperature
Cleaning methods may include:	• water • steam cleaning • degreasing • vacuum • forced air

Unit Sector(s)

Mobile Plant Operations

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO206B Conduct bulk water truck operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting bulk water truck operations in mining and extractive industries. It includes planning and preparing for operations; operating the truck; loading, hauling and distributing water; and carrying out post-operational procedures.

Application of the Unit

Bulk water trucks are purpose built vehicles for the transport and distribution of water on worksites and may include: diesel-mechanical, diesel-electric, rigid or articulated vehicles. This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting bulk water truck operations 1.2. Obtain, interpret and clarify ***work requirements and procedures*** for the satisfactory completion of the allocated job 1.3. Access, interpret and apply ***geological*** and ***survey data*** required to complete the allocated job 1.4. Resolve ***coordination*** requirements with others at the site prior to commencing and during work activities
2. Operate truck	2.1. Carry out ***pre-start***, ***start-up***, ***park-up and shutdown procedures*** 2.2. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.3. Conduct, control and monitor operations within the equipment limitations 2.4. Act on or report ***monitoring systems and alarms*** 2.5. Recognise and respond to ***hazardous and emergency situations***
3. Load, haul and distribute water	3.1. Load water at the water point 3.2. Carry out water haulage operations efficiently in accordance with requirements and procedures 3.3. Distribute water efficiently in accordance with requirements and procedures 3.4. Complete work in accordance with agreed work requirements and within the operating capacity of the allocated equipment
4. Carry out post-operational procedures	4.1. Inspect, fault find and report faults 4.2. Carry out routine ***operator servicing***, ***maintenance and housekeeping tasks*** 4.3. Maintain and process ***records and reports***

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct bulk water truck operations: • apply legislative, organisation and site requirements and procedures • apply operational safety requirements • access, interpret and apply technical information • apply equipment records maintenance procedures • apply diagnostic techniques • apply procedures for dispose of environmentally sensitive fluids and materials • apply chemical and fuel safety measures • work wearing personal protective equipment
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct bulk water truck operations: site risk control procedures: • site and equipment health and safety requirements • site environmental requirements and constraints • site quality requirements • site communication procedures • site geological and survey data • site operational procedures • truck operational procedures • truck maintenance systems and procedures • bulk water truck characteristics, technical capability and limitations • hazard identification and response procedures • site record keeping requirements • site personal protective equipment requirements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction

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with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting bulk water truck operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of bulk water truck operations • working with others to undertake and complete bulk water truck operations that meets all of the required outcomes • consistent timely completion of bulk water truck operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical

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	resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete bulk water truck operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements and procedures may come from briefings, handovers, and work orders and may include:	• product identification • nature and scope of tasks • achievement targets • operational conditions • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • water tables or other water sources
Survey data may include relevant site-specific information in relation to:	• floor heights • bench widths • grades
Coordination with others may include with:	• supervisors • plant operators (fixed & mobile) • contractors • traffic coordinators & weighbridge operators • other site personnel • loading units • other earthmoving equipment • materials handling equipment

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	• light vehicles • lighting plant • use of 2-way radios
Pre-start and start-up procedures are to include:	• external check of the machine • checking and topping up fluid levels (including fuel) • lubrication • inspection of attachments to ensure security and defects • instrument and control lever checks • reporting of defects and damage
Park-up and shutdown procedures are to ensure that:	• vehicle/equipment is secured as required by site procedures • attachments are rendered safe • access ways are clear

Operating techniques may include:	• equipment positioning
	• load discharge
	• observing site speed limits
	• working safely around:
	  • overhead powerlines
	  • other machines and personnel
	  • live stockpiles

Changing work conditions may include variations in:	• grades • height of faces • weather conditions • day and night
Monitoring systems and alarms may include:	
Hazardous and emergency situations may include:	• powerlines • conveyors • overhead service • lightning strikes (potential tyre explosion) • tyre fires (isolation procedures)
Operator service, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• cleaning, • authorised servicing and the monitoring • recording and reporting of faults • conduct of authorised minor replacements • provision of assistance to maintenance personnel during maintenance and repair activities

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Records and reports may include:	• fuel usage • computer readings • end of shift documentation • supplies logs • work logs stockpile information • quality information • despatch details

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO208A Operate support equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers operating support equipment in the coal and metalliferous mining industries. It includes: planning and preparing for operations; operating the support equipment; and carrying out operator maintenance.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to operating ***support equipment*** 1.2. Obtain, interpret and clarify ***work requirements*** before proceeding 1.3. Access, interpret and apply geological and survey data required to complete the allocated work 1.4. Access and apply ***safety information and procedures*** throughout the work
2. Operate support equipment	2.1. Coordinate activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up and shutdown procedures 2.3. Change and operate ***ancillary attachments*** to the support equipment 2.4. Operate support equipment with or without ancillary attachments 2.5. Recognise and respond to hazardous and emergency situations 2.6. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the equipment
3. Carry out operator maintenance	3.1. Carry out equipment inspections and fault finding 3.2. Carry out authorised routine operational servicing, lubrication and housekeeping tasks 3.3. Carry out authorised minor maintenance 3.4. Provide authorised operator support during preparation for, and conduct of, major maintenance tasks 3.5. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to operate support equipment:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply procedures to match appropriate equipment with tasks
- apply equipment records maintenance requirements
- use relevant hand tools
- apply hand-eye coordination
- apply diagnostic techniques
- apply environmental constraints related to the specified operations
- apply procedures for disposal of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to operate support equipment:

- site and equipment safety requirements
- equipment and ancillary attachment characteristics, technical capabilities and limitations
- specified support equipment operational procedures
- specified support equipment maintenance systems and procedures
- basic geological and survey data related to the specified operation
- site environmental requirements and constraints related to the support equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating support equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of support equipment • working with others to operate support equipment and meet all of the required outcomes • consistent timely operation of support equipment that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of support equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Support equipment may include:	• skid steer vehicle • tractor • backhoe • excavator • small front end loader • vibrator roller • sheafs foot roller • chain saw • telescopic handlers
Work requirements may be in the form of:	• shift briefings • handover details • work orders • support equipment identification/allocation • nature and scope of the tasks • achievement targets • working conditions • site lighting arrangements • defects to equipment • hazards and potential hazards • coordination requirements / issues
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice

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	• manufacturer's instructions • safe working or job procedures (or equivalents)
Ancillary attachments may include:	• buckets • auger • grass cutter • brush cutter • slasher • pneumatic hammer • shovel • plough • rotary hoe • any other commercially or site produced attachment

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO210A Conduct underground truck operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting truck operations in underground metalliferous mines. It includes: planning and preparing for operations; loading hauling and discharging material; and carrying out operator maintenance and housekeeping activities.

Application of the Unit

This unit is appropriate for those working in a mobile plant operator roles, in underground mines, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting truck operations in underground metalliferous mines 1.2. Receive, interpret and clarify shift changeover details 1.3. Select appropriate personal protective equipment 1.4. Select appropriate type of auxiliary equipment for work activities 1.5. Perform ***equipment pre-start checks*** to ensure equipment is ready for operation 1.6. Carry out ***start-up procedures*** 1.7. Inspect and assess site conditions to determine if scaling is required and take action according to site requirements 1.8. Identify, address and report ***potential hazards and risks*** 1.9. Identify, address and report ***environmental issues*** 1.10. Adhere to ***emergency procedures*** to ensure safety of personnel, equipment and site 1.11. Use approved ***dust suppression and extraction methods*** 1.12. Ensure area is well ventilated before entry into work area 1.13. Erect ***safety provisions*** where appropriate 1.14. Pass on end of shift information to oncoming shift
2. Load material	2.1. Position ***truck*** for loading clear of services in accordance with site requirements 2.2. Remain in truck when loading or at safe distance from loading operation 2.3. Ensure truck is loaded to capacity without spillage
3. Haul material	3.1. Operate truck safely within ***working environment limitations*** and road conditions, observing ***safe driving***

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	conventions 3.2. Confirm type of ***material*** and haul to designated location 3.3. Communicate with other personnel using approved communication methods 3.4. Maintain hauling efficiency by managing working environment 3.5. Monitor and manage equipment performance using appropriate ***indicators*** to aid efficient operations 3.6. Identify, remove, and dispose of ***contaminants*** 3.7. Identify and manage spillages on hauling surface 3.8. Ensure tray is in the correct position before equipment is in motion
4. Discharge material	4.1. Check safety provisions are in place before entering and leaving tipping site 4.2. Position truck in safe area 4.3. Discharge load 4.4. Lower or retract tray fully before driving off the tipping area
5. Carry out operator maintenance	5.1. Carry out shutdown procedures 5.2. ***Service*** and make minor adjustments to equipment
6. Conduct housekeeping activities	6.1. ***Clean equipment*** to maintain condition of equipment and ensure safe and efficient operations 6.2. Clean and store auxiliary service equipment 6.3. Manage and/or report hazards to maintain a safe working environment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct underground truck operations:

- apply legislative, organisation and site requirements and procedures
- interpret ground conditions
- apply procedures for directing operations
- apply equipment operating, maintenance and cleaning requirements and procedures
- use hand and power tools
- apply tipping procedures
- apply vehicle refuelling procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct underground truck operations:

- mine operational system
- underground procedures
- geological and technical data
- equipment parking
- primary and secondary ventilation
- environmental procedures
- equipment safety requirements
- start-up and shutdown procedures
- operational procedures and checks
- equipment processes, technical capability and limitations
- road rules
- hauling procedures
- loading procedures
- manufacturer's specifications
- towing methods
- refuelling vehicle

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting underground truck operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of underground truck operations • working with others to undertake and complete underground truck operations that meet all of the required outcomes • consistent timely completion underground truck operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the underground truck operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Equipment pre-start checks may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • cab condition (no rags in air conditioner vent, dirt around brake and accelerator pedals, seat condition, all gear secured) • cab mounts • computer systems • correct location of equipment • damage to equipment • danger tags • display instrumentation and gauges (e.g. indicators, gauges, laser levels) • emergency brake checks • emergency steering • engine and stop engine lights (orange and red) • fire suppression unit (pins in position in triggers) • fluid leaks (e.g. oil/fuel/water - engine, hydraulic hoses, on ground, radiator, hoses, transmission) • fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel, transmission) • light positioning and cleanliness • no combustible material around exhaust • personal proximity • portable fire extinguisher (bracket, gauge,

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	hose, ease of access) • radiator top up tank • safety mechanisms operational (e.g. horn, operating lights)
Start-up, **park and shutdown procedures** may include:	• tyres and rim condition • vehicle is left secured • vehicle number • visual and audio warning devices and lights • wheel nuts and studs • windows (clean, emergency exit tag in place)
Potential hazards and risks may include:	• adjoining pit walls • vertical opening • brake failure • break and steering failure • bund and/or wall collapse • clean floor • communication failure • decline traffic • fatigue • fire • fire on equipment • hydraulic line failure • level surface • mount dismount injuries • pot holes • road conditions • rocks • spillage • stable ground • surface free of obstructions • unauthorised personnel • undercut brow • unsafe ground • visibility • loading from chutes
Environmental issues may include:	• dust • fumes • noise • water
Emergency procedures may include:	• clean up • equipment shut down procedures

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	• evacuation procedures/First Aid • notification of authorities • safety equipment • use of personal protective equipment
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Safety provisions may include:	• barricades erected where necessary • signage visible • stop blocks in approved condition and made to approved dimensions • lights
Trucks may include:	• 4 wheel drive (diesel, electric) • 6 wheel drive • articulated • rigid • tipping or ejector tray
Working environment limitations may include:	• broken ground • dry • location of water table • noise • slope of working surface • stability of ground • stable ground (compaction) amount of scale • ventilation characteristics (fumes, dust) • visibility • wet
Safe driving conventions may include:	• speed limits • mine lighting • site vehicle identification lights • right of way • parking in stockpiles • parking on incline/decline • refuelling procedures • rules at intersections • driving regulations, rules and conventions • towing methods • shute operations

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Materials may include:	• gravel/ore • overburden • oxidised waste • rejects • road base • rubbish • sand • sulphide rock fill • tailings
Indicators may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • fuel filter • parking brake • retarder • service meter • speedometer/odometer • steering filters • tachometer • torque converter oil temperature • transmission filter • voltmeter • water temperature
Contaminants may include:	• cigarette butts • consumables • ear plugs • explosives • metal bucket teeth • metal or steel rods • old piping • old workings • plastic • timber • wet fill
Servicing may include:	• checking fluid levels • filter changing • greasing • keeping cab clean • tightening loose fittings
Equipment cleaning methods	• degreasing

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may include:	• forced air • steam cleaning • vacuum • water

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO301C Conduct hydraulic excavator operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting hydraulic excavator operations in mining and extractive industries. It includes: planning and preparing for operations, operating the excavator, and carrying out post-operational procedures.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting hydraulic excavator operations 1.2. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations 1.3. Access, interpret and clarify ***geological and survey data*** required to complete the allocated work 1.4. ***Inspect and prepare work area*** in ***coordination with others*** 1.5. Identify, address and report ***potential hazards and risks*** 1.6. Resolve coordination requirements with others at the site prior to commencing and during work activities 1.7. Select personal protective equipment appropriate for work activities 1.8. Evaluate ***equipment and/or attachments*** supplied for suitability for the work to be undertaken to maximise efficiency and effectiveness of work activities
2. Operate hydraulic excavator	2.1. Carry out ***pre-start***, ***start-up***, ***park-up and shutdown procedures*** 2.2. Walk excavator and position for operation 2.3. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.4. Conduct, control and monitor operations within the ***equipment limitations*** 2.5. Act on or report ***monitoring systems and alarms*** 2.6. Distribute bulk ***materials*** into ***materials handling equipment*** to ensure maintenance of the stability and maximum load requirements. 2.7. Load bulk materials into ***materials handling equipment*** 2.8. Side cast bulk materials 2.9. Recognise and ***respond*** to ***hazardous and***

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	emergency situations 2.10. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the allocated equipment
3. Carry out post-operational procedures	3.1. Inspect, fault find and report faults 3.2. Carry out ***operational maintenance and housekeeping tasks*** 3.3. Process ***records and reports***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct hydraulic excavator operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply equipment records maintenance requirements
- apply diagnostic techniques
- use relevant hand tools
- apply procedures for disposal of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- work wearing personal protective equipment

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct hydraulic excavator operations:

- site hazard identification and response procedures
- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements
- site communication procedures
- site product characteristics
- site geological and survey data
- site operational procedures
- excavator pre-start, start-up, operating and shutdown procedures and techniques
- excavator characteristics, technical capability and limitations
- site record keeping requirements
- site personal protective equipment requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting hydraulic excavator operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of hydraulic excavator operations • working with others to undertake and complete hydraulic excavator operations that meets all of the required outcomes • consistent timely completion of hydraulic excavator operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete hydraulic excavator operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may come from briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout and out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • signage and barricade requirements • keeping floor clean and level
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • water tables or other water sources
Survey data may include relevant site-specific information in relation to:	• floor heights • bench widths • grades
Inspect and prepare work area may include:	• identification of hazards • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection • determination of appropriate path of movement for loads and equipment/vehicles • floor, pad, roads, ramps and bench clean up to specified levels and grade requirements
Coordination with others may include with:	• yard persons • laboratory personnel • mobile plant operators

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	• processing plant operators • haulage unit operators • maintenance personnel
Potential risks and hazards may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground • unstable faces • vehicles • overhead and underground services • trees • fires • vehicles • stored energy which may include: • engine components • radiators and cooling systems • hydraulic tanks and reservoirs • air tanks and reservoirs • hydraulic hoses • air hoses • tires • air conditioning components • electrical components • braking systems • centrifugal forces
Equipment and/or attachments may include:	• rock breaker • grapples • compactors • magnets • post-hole drills or augers • ripper tynes • buckets

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Pre-start and start-up procedures include:	• external check of the machine • checking and toping up fluid levels (including fuel) • lubrication • inspection of attachments to ensure security and defects • instrument and control lever checks • machine function checks, including: • implements • attachments • other attachments • brakes • manoeuvrability • reporting defects and damage
Park-up and shutdown procedures include ensuring that:	• vehicle/equipment is secured as required by site procedures • attachments are rendered safe • access ways are clear
Operating techniques may include:	• bucket loading • equipment positioning • load discharge • observing site speed limits • working safely around: • overhead power lines • other machines and personnel • live stockpiles
Changing work conditions may include variations in:	• grades • height of faces • materials • haulage units • materials handling facilities • weather conditions • day and night
Equipment limitations may include:	• duration of operation • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations
Monitoring systems and alarms may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure

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	• fuel filter • parking brake • retarder • service meter • speedometer/odometer • steering filters • tachometer • torque converter • oil temperature • transmission filter • voltmeter • water temperature
Materials may include:	• gravel • ore • overburden • oxidised waste • rejects • road base • rubbish • sand • sulphide rock fill • tailings • topsoil • water
	•
Materials handling equipment may include:	• feed hoppers • feeders and crushers • off-highway and on-highway vehicles • barges
Hazardous and emergency situations may include:	• power lines • dust • noise • conveyors • overhead services
Emergency responses may include:	• clean up • equipment shutdown procedures • evacuation procedures • First Aid • isolation procedures • notification of authorities • use of personal protective equipment

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Operator service, maintenance and housekeeping tasks are those established and authorised for the site and may include:	• lubrication • refuelling • cleaning • authorised servicing • monitoring, recording and reporting of faults • it may also include: • the conduct of authorised minor replacements and • the provision of assistance to maintenance personnel during maintenance and repair activities
Records and reports may include:	• fuel usage • computer readings • end of shift documentation • supplies logs • work logs stockpile information • quality information • despatch details

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO302B Conduct hydraulic shovel operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting hydraulic shovel operations in the mining and extractive industries. It includes planning and preparing for operations, operating the shovel, digging and loading trucks, and cleaning equipment to site requirements.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting hydraulic shovel operations 1.2. Receive, interpret and clarify shift changeover details 1.3. Evaluate equipment and/or attachments supplied for suitability for the work to be undertaken, according to job specifications and to maximise efficiency and effectiveness of work activities 1.4. Identify, address and report ***potential hazards and risks*** 1.5. Select personal protective equipment appropriate for work activities 1.6. Carry out equipment ***pre-start check*** to ensure equipment is ready for operation 1.7. Comply with ***environmental requirements*** 1.8. Establish and maintain communication with other personnel using approved communication methods 1.9. Follow ***emergency procedures*** to ensure safety of personnel and plant
2. Operate shovel	2.1. Start shovel to manufacturer's operational requirements 2.2. Warm up and exercise shovel and associated equipment, and check controls and instruments for correct functioning 2.3. Monitor and respond to equipment performance utilising appropriate indicators and alarms to aid efficient and effective operation 2.4. Operate shovel smoothly, with correct reach angle to allow optimum efficiency and bucket load, and minimise overload or strain on shovel 2.5. Position shovel for safe, efficient extraction
3. Dig and load trucks	3.1. Position and set up shovel for safe, efficient digging 3.2. Determine and maintain depth of bench to allow optimum use of bucket ***capacity***

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	3.3. Set and monitor bucket penetration for optimum bucket load and to minimise overload or strain on shovel 3.4. Walk shovel and re-position for safe and efficient operation 3.5. Communicate with and direct truck positioning for safe ***loading*** operation 3.6. Load material on truck so that bucket clears side of truck and is not swung over truck cabin, ***material*** is placed in the centre of tray and does not exceed truck load limit 3.7. Check surrounding area and re-position shovel in regard to other operations personnel, to meet digging requirements 3.8. Keep floor clear and level and remove spillages 3.9. Park shovel in safe area, on flat, level ground at end of shift
4. Clean equipment to site requirements	4.1. ***Clean*** and store attachments and other ancillary equipment ready for further use 4.2. Complete all required records and documentation accurately and promptly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct hydraulic shovel operations:

- apply legislative, organisation and site requirements and procedures
- apply diagnostic techniques
- apply hazardous goods handling techniques
- apply loading techniques
- interpret plans, reports, maps, specifications
- apply lifting techniques
- organise work tasks
- work in a team

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct hydraulic shovel operations:

- operating principles and practices
- breakdown procedures
- emergency procedures
- environmental and heritage procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data
- hauling procedures
- fatigue management
- hazardous goods procedures and consequences of spills
- isolation procedures
- mine operational system
- night and day working procedures
- OHS procedures
- operational procedures and checks
- road rules
- shutdown procedures
- site safety requirements
- start-up procedures

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Evidence Guide

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Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting hydraulic shovel operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of hydraulic shovel operations • working with others to undertake and complete hydraulic shovel operations that meet all of the required outcomes • consistent timely completion of hydraulic shovel operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete hydraulic shovel operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Potential risks and hazards may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground • unstable faces • vehicles
Pre-start checks may include:	• cab condition (no rags in air conditioner vent, dirt around brake and accelerator pedals, seat condition, all gear secured) • cab mounts • damage to equipment • danger tags • engine oil to be checked before starting engine • fire suppression unit (pins in position in triggers) • grease lines

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	• light positioning and cleanliness • no combustible material around exhaust • oil leaks (engine, hydraulic hoses, ground); fuel leaks (engine, on ground); water leaks (radiator, hoses) • personal proximity • portable fire extinguisher (bracket, gauge, hose, ease of access) • radiator top up tank • vehicle number • windows (clean, emergency exit tag in place)
Environmental requirements may include:	• culturally-sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality
Emergency procedures may include:	• clean up • equipment shutdown procedures • evacuation procedures • First Aid • isolation procedures • notification of authorities • use of personal protective equipment
Capacity of equipment and/or attachments may include:	• duration of operation • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations
Loading face characteristics may include:	• stable • unstable
Material may include:	• gravel • ore • overburden • oxidised waste • rejects

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	• road base • rubbish • sand • sulphide rock fill • tailings • topsoil • water
Cleaning methods may include:	• degreasing • forced air • steam cleaning • vacuum • water

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO303A Conduct rope shovel operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting rope shovel operations in the mining industries. It includes:
planning and preparing for operations;
Operating the shovel; digging and loading trucks; and conducting housekeeping activities.

Application of the Unit

Rope shovels can be either diesel or electric powered. This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting rope shovel operations 1.2. Receive, interpret and clarify shift changeover details 1.3. Evaluate equipment and/or attachments supplied for suitability for the work to be undertaken, according to job specifications and to maximise efficiency and effectiveness of work activities 1.4. Identify, address and report ***potential hazards and risks*** 1.5. Select personal protective equipment appropriate for work activities 1.6. Carry out equipment ***pre-start checks*** to ensure equipment is ready for operation 1.7. Comply with ***environmental requirements*** 1.8. Position or move cable towers, power lines and/or crossovers to location according to work plan, ensuring safety of operator and other personnel 1.9. Establish and maintain communication with other personnel using approved communication methods 1.10. Follow ***emergency procedures*** to ensure safety of personnel and plant
2. Operate shovel	2.1. Start shovel to manufacturer's operational requirements 2.2. Warm up and exercise shovel and associated equipment, and check controls and instruments for correct functioning 2.3. Interpret instruments and alarms and take appropriate action in response 2.4. Operate shovel smoothly, with correct reach angle to allow optimum efficiency and bucket load, and minimise overload or strain on shovel 2.5. Position shovel for safe, efficient extraction
3. Dig and load trucks with electric rope shovel	3.1. Position and set up shovel for safe, efficient digging

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	3.2. Determine and maintain depth of bench to allow optimum use of bucket ***capacity*** 3.3. Set and monitor bucket penetration for optimum bucket load and to minimise overload or strain on shovel 3.4. Walk shovel and re-position shovel, power lines and cable towers for safe and efficient operation 3.5. Communicate with and directs truck positioning for safe ***loading*** operation 3.6. Load ***material*** on truck so that bucket clears side of truck and is not swung over truck cabin, material is placed in the centre of tray and does not exceed truck load limit 3.7. Check surrounding area and re-position shovel in regard to other operations personnel, to meet digging requirements 3.8. Keep floor clear and level and removes spillages 3.9. Park shovel in safe area, on flat, level ground at end of shift
4. Conduct housekeeping activities	4.1. ***Clean*** equipment to site requirements 4.2. Clean and store attachments and other ancillary equipment ready for further use 4.3. Complete all required records and documentation accurately and promptly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct rope shovel operations:

- apply legislative, organisation and site requirements and procedures
- apply diagnostic techniques
- apply hazardous goods handling techniques
- interpret plans, reports, maps, specifications
- apply lifting techniques
- organise work tasks
- work in a team

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct rope shovel operations:

- electric rope shovel operating principles and practices
- breakdown procedures
- emergency procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data
- fatigue management
- hauling procedures
- hazardous goods procedures and consequences of spills
- isolation procedures
- mine operational system
- night and day working procedures
- OHS procedures
- open cut procedures
- operational procedures and checks
- road rules
- shutdown procedures
- site safety requirements
- start-up procedures
- towing procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting rope shovel operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of rope shovel operations • working with others to undertake and complete rope shovel operations that meet all of the required outcomes • consistent timely completion of rope shovel operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the rope shovel operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Potential hazards and risks may include:	• abandoned equipment
	• adjoining pit walls
	• adverse weather conditions (electrical storms, floods, fires)
	• chemicals
	• contaminants
	• equipment
	• fences
	• holes
	• materials
	• over-hanging rocks
	• personnel
	• pot holes
	• unsafe ground
	• unstable faces
	• vehicles
	• stored energy which may include:
	  • engine components
	  • radiators and cooling systems
	  • hydraulic tanks and reservoirs
	  • air tanks and reservoirs
	  • hydraulic hoses
	  • air hoses
	  • tires
	  • air conditioning components

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	• electrical components • braking systems • centrifugal forces
Pre-start checks may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • computer systems • display instrumentation and gauges (indicators, gauges, laser levels) • electric motor run lights • fluid levels (windscreen washer tank, hydraulic oil, grease, gearbox oil) • visual and audio warning devices and lights
Environmental requirements may include:	• culturally-sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality
Emergency procedures may include:	• clean up • equipment shutdown procedures • evacuation procedures • First Aid • isolation procedures • notification of authorities • use of personal protective equipment
Capacity of equipment and/or attachments may include:	• duration of operation • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations
Loading face characteristics may include:	• stable • unstable
Material may include:	• gravel • ore • overburden • oxidised waste

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	• rejects • road base • rubbish • sand • sulphide rock fill • tailings • topsoil • water
Cleaning methods may include:	• degreasing • forced air • steam cleaning • vacuum • water

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO304B Conduct wheel loader operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of wheel loader operations in mining and extractive industries. It includes planning and preparing for operations, operating the loader, and carrying out post-operational procedures.

Application of the Unit

Wheel loaders are self-propelled wheeled machines with an integral front-mounted bucket-supporting structure and linkage. It loads or excavates through forward motion of the machine, and lifts, transports and discharges material. This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting wheel loader operations 1.2. Obtain, interpret and apply ***work requirements and procedures*** for the satisfactory completion of the allocated job 1.3. Access, interpret and apply ***geological*** and ***survey data*** required to complete the allocated job 1.4. ***Inspect*** and ***prepare work area*** in coordination with others 1.5. Identify, manage and report ***potential hazards and risks*** 1.6. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.7. Select and wear ***personal protective equipment*** appropriate for work activities
2. Operate the loader	2.1. Carry out ***pre-start***, ***start-up***, ***park-up and shutdown procedures*** 2.2. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.3. Conduct, control and monitor operations within the equipment limitations 2.4. Act on or report ***monitoring systems and alarms*** 2.5. Recognise and respond to ***hazardous and emergency situations*** 2.6. Complete work in accordance with the agreed work requirements and within the operating capacity of the allocated equipment
3. Carry out post-operational procedures	3.1. Inspect, fault find and report faults 3.2. Carry out routine ***operator servicing***, ***maintenance and housekeeping tasks*** 3.3. Maintain and process ***records and reports***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct wheel loader operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- apply environmental requirements
- apply environmentally sensitive fluids and materials disposal requirements and procedures
- apply chemical and fuel safety measures
- apply hazardous goods handling techniques
- apply manual lifting techniques
- work wearing personal protective equipment
- access, interpret and apply technical information
- interpret plans, reports, maps, specifications
- apply hand-eye coordination
- apply equipment operating techniques
- apply work tasks organising techniques
- work in a team
- apply equipment records maintenance requirements
- apply diagnostic techniques
- use relevant hand tools

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct wheel loader operations:

- site risk control procedures
- hazard identification and response procedures
- hazardous substances handling techniques
- site personal protective equipment requirements
- site and equipment health and safety procedures
- site environmental and heritage requirements and constraints
- site quality requirements
- site communication procedures
- site product characteristics

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- site geological and survey data
- site operational procedures
- pre-start, start-up, operating and shutdown procedures and techniques
- machine characteristics, technical capability and limitations
- machine operational procedures
- isolation procedures
- maintenance systems and procedures
- site record keeping requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting wheel loader operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of wheel loader operations • working with others to undertake and complete wheel loader operations that meet all of the required outcomes • consistent timely completion of wheel loader operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete wheel loader operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements and procedures may come from briefings, handovers, and work orders and may be written or verbal, formal or informal, depending on the complexity of the process and may include:	• product identification • nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • broken ground • water tables or other water sources • wet and dry areas • degree of compaction
Survey data may include relevant site-specific information in relation to:	• floor heights • bench heights and widths • ramp and floor grades • underground workings and voids

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Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection
	• determination of appropriate path of movement for loads and equipment/vehicles
	• floor clean up to specified levels and grade requirements
	• selection and implementation of environmental control measures

Potential hazards and risks may include:	• installed services
	• damaged or defective pressurise hoses and fastenings
	• abandoned equipment
	• adjoining pit walls or structures
	• adverse weather conditions (electrical storms, floods, fires)
	• chemicals
	• contaminants
	• ancillary equipment
	• fences
	• holes and pot holes
	• over-hanging rocks
	• personnel
	• unsafe ground
	• unstable faces
	• vehicles
	• powerlines
	• dust and noise
	• conveyors
	• overhead services
	• stored energy which may include:
	  • engine components
	  • radiators and cooling systems
	  • hydraulic tanks and reservoirs
	  • air tanks and reservoirs
	  • hydraulic hoses
	  • air hoses
	  • tyres

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	• air conditioning components • electrical components • braking systems • centrifugal forces
Coordination requirements may include with:	• other mobile plant operators • processing plant operators • maintenance personnel • water truck operators • service vehicle operators • crane and float operators • contractors • inspectors • supervisors • visitors
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Pre-start and start-up procedure may include:	• external check of the machine • inspection of attachments to ensure security and identify defects • selection, removing and fitting of attachments • checking of fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • carry out lubrication • checking of display instrumentation and gauges (indicators, gauges, laser levels), computer systems • inspection of air filter restriction indicator • inspection and checking of cab (horn, lights, air conditioner) • testing of engine and stop engine lights • testing visual and audio warning devices and lights • checking instruments and control lever • reporting of defects and damage
Park-up and shutdown procedure may include:	• secure equipment as required by site procedures • render attachments safe • clear access ways

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Operating techniques may include:	• manoeuvring
	• braking
	• bucket loading
	• single sided loading
	• double sided loading
	• drive by loading
	• load carrying
	• haulage vehicle positioning
	• load discharge
	• building and maintaining stockpiles
	• blending materials
	• attaching, securing, lifting, carrying and placing materials
	• driving machines on to floats
	• towing
	• observing site speed limits
	• working safely around:
	  • overhead powerlines
	  • other machines and personnel
	  • live stockpiles

Changing work conditions may include variations in:	• bulk material grades • height of stockpiles • materials • contamination • haulage units • materials handling facilities • weather conditions • light conditions (including day and night)
Monitoring systems and alarms may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • fuel filter • parking brake • retarder • service meter • speedometer/odometer • steering filters • tachometer • torque converter • oil temperature

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	• transmission filter • voltmeter • water temperature
Hazardous and emergency situations may include:	• powerlines and other overhead services • dust and noise • face overhangs • lighting strikes (potential tyre explosion) • tyre fires (isolation procedures)
Operator service, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• cleaning • authorised servicing and the monitoring • recording and reporting of faults • conduct of authorised minor replacements • provision of assistance to maintenance personnel during maintenance and repair activities
Records and reports may include:	• fuel usage • computer readings • end of shift documentation • supplies logs • work logs stockpile information • quality information • despatch details

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO305B Conduct coal stockpile dozer operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting stockpile dozer operations in the coal mining industry. It includes: planning and preparing for operations, operating the dozer, performing stockpile operations, and carrying out operator maintenance.

Application of the Unit

This unit covers all tracked dozers; and those tasks and performance criteria which are within the legal and technical limitations of rubber-wheeled dozers. It is appropriate for those working in mobile plant operator roles, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***stockpile dozer operations*** 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Interpret and apply basic geological and survey data required to complete the allocated task 1.4. Access and apply ***safety information and procedures*** throughout the operations
2. Operate dozer	2.1. Coordinate operations with other involved personnel and equipment/plant 2.2. Carry out pre-start, start-up and shutdown procedures 2.3. Effectively use dozer controls and functions to complete specified tasks 2.4. Carry out ***towing and pushing*** of equipment and plant safely and in accordance with the authorised equipment and/or connection capabilities 2.5. Act on or report monitoring systems and alarms 2.6. Recognise and respond to hazardous and emergency situations
3. Perform stockpile operations	3.1. Place coal in and remove from predetermined stockpile location to work specifications 3.2. Form slope and height to work specifications 3.3. Pack coal to prevent air ingress, fires and weather channelling 3.4. Level stockpiles to tolerances 3.5. Monitor and respond to spontaneous combustion indicators 3.6. Monitor and respond to contamination indicators
4. Carry out operator maintenance	4.1. Carry out dozer inspections and fault-finding 4.2. Carry out authorised routine operational servicing, lubrication and housekeeping

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	tasks 4.3. Carry out authorised minor maintenance 4.4. Process records

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.
Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct coal stockpile dozer operations: • apply legislative, organisation and site requirements and procedures • apply operation safety • access, interpret and apply technical information • apply hand-eye coordination • use relevant hand tools • apply diagnostic techniques • apply chemical and fuel safety measures • apply procedures for disposal of environmentally sensitive fluids and materials • maintain equipment records
Required knowledge
Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct coal stockpile dozer operations: • site and equipment safety requirements • stockpile management procedures • equipment characteristics, technical capabilities and limitations • dozer operational procedures • dozer maintenance systems and procedures • site environmental requirements and constraints related to dozer operations • basic geological and survey data

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting coal stockpile dozer operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of coal stockpile dozer operations • working with others to undertake and complete the coal stockpile dozer operations that meet all of the required outcomes • consistent, timely completion of coal stockpile dozer operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the coal stockpile dozer operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Stockpile dozer operations may include:	• ripping • pushing and levelling of coal • pad preparation • drainage • dump establishment • maintenance
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirements may include:	• plant identification/allocation • nature and scope of the task • achievement targets • working conditions • adequacy of site lighting • defects to equipment • hazards and potential hazards • coordination requirements/issues
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice • manufacturer's instructions • safe working procedures (or equivalent)
Specific **safety** requirements are to	• boarding and disembarkation procedures

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include:	• spontaneous combustion awareness • slippery conditions • uneven surfaces • operational signal procedures • equipment lowering and lifting
Towing and pushing may include:	• coal haulers • pumps • lighting sets • other dozers

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO306A Operate plant/machinery on live stockpiles

Modification History

Not applicable.

Unit Descriptor

This unit covers operating plant/machinery on live stockpiles in resources and infrastructure industries. It includes: preparing for operations; pushing and placing materials on the stockpile and around draw points and bridged materials; and finalising stockpile operations.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for placement and moving of materials on stockpile	1.1. Access, interpret and apply ***compliance documentation*** relevant to operating ***plant/machinery*** on live stockpiles 1.2. Obtain, interpret and clarify work requirements and shift change over details for the satisfactory completion of operations 1.3. Access, interpret and clarify ***geological and survey data*** required to complete the allocated work 1.4. Inspect and assess state of stockpile ***slope stability*** 1.5. Select Personal Protective Equipment appropriate for work activities 1.6. Arrange ***communications*** with other relevant ***site personnel*** 1.7. Identify, address and report ***potential hazards*** 1.8. Identify, address and report ***environmental issues***
2. Push and place materials on the stockpile	2.1. Resolve ***coordination*** requirements with others at the site prior to commencing and during work activities 2.2. Carry out plant/equipment ***pre-start checks*** 2.3. Identify location, and build and maintain windrows to ensure safe operating distance from edges of stockpile 2.4. Continuously assess location of stockpile edge in relation to operating plant/equipment and stability of stockpile slope 2.5. Push materials perpendicular to and facing the slope edge and avoiding operation parallel to the stockpile edge 2.6. Continuously monitor and assess changes in ***ground conditions*** and moderate activities to maintain safe operation 2.7. Operate at a speed consistent with the type of work being performed and the current ground conditions
3. Push and place materials	3.1. Inspect stockpile to identify the location of

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around draw points and bridged materials	draw points/holes and suspected bridged materials and ensure that draw points/holes are clearly indicated 3.2. Continuously assess location of draw points/holes and bridged materials in relation to operating plant/equipment to maintain safe operation 3.3. Operate plant/machinery perpendicular to the edge of the draw hole or bridged material maintaining a safe distance from draw hole/bridge 3.4. Remain on machine and keep a safe distance away from draw holes and identified bridges 3.5. Communicate with relevant site personnel to determine the feeders being used and the amount of material being drawn from the stockpile
4. Finalise stockpile operations	4.1. Carry out plant/equipment shut-down procedures 4.2. Clean, inspect and store attachments and equipment 4.3. Clean and leave plant/equipment parked on stable, flat ground for use by next operator 4.4. Report location and state/condition of plant/equipment before going off shift 4.5. Complete all required records and documents

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to operate plant or machinery on live stockpiles:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical and safety information
- apply diagnostic/faultfinding techniques
- apply environmental requirements
- apply procedures for working at heights

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to operate plant or machinery on live stockpiles:

- operational safety procedures when working on top of stockpiles
- worksite inspections
- plant/machine operation and controls
- communication procedures
- types of personnel involved in stockpile operations and their roles
- hazards associated with working on a stockpile
- monitoring stockpile conditions and slope stability
- working at heights
- siting and building windrows
- identifying draw holes and bridged materials
- start-up checks and procedures
- isolation and lock-out procedures
- shut-down procedures
- site recording and reporting systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating plant/machinery on live stockpiles • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of plant/machinery on live stockpiles • working with others to operate plant/machinery on live stockpiles and meet all of the required outcomes • consistent timely operating of plant/machinery on live stockpiles that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to operate plant/machinery on live stockpiles

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Plant/machinery may include:	• dozer • excavator • bobcat/skid steer • loader
Geological data may include relevant site-specific information in relation to:	• material type and characteristics • faults and joints • water sources
Survey data may include relevant site-specific information in relation to:	• floor heights/bench widths • grades
Indications of **slope stability** may include:	• cracks along the crest • slumping on the slope • over steeping • undercutting • overhangs
Communications may include:	• 2- way radio • telephone • mobile phone • visual signals • ensuring all persons are clear on operations before starting job • discussion of job dangers/hazards
Site personnel may include:	• stockpile attendants • reclaimer operators

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	• other mobile plant operators • processing plant operators • maintenance personnel • supervisors
Potential hazards may include:	• driving over the edge • going through an inadequate windrow • slope failure • weak material around draw holes • hidden voids • bridged material • material from above
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality
Coordination may be with:	• stockpile attendants • reclaimer operators • other mobile plant operators • processing plant operators • maintenance personnel • supervisors
Pre-start checks may include:	• external check of the machine • checking and topping up fluid levels (including fuel) • lubrication • inspection of attachments to ensure security and defects • instrument and control lever checks • reporting defects and damage
Ground conditions may be affected by weather condition including:	• rain • sleet • snow • freezing • thawing

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Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO307B Conduct wheel grader operations in underground mines

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting wheel grader operations in underground mine. It includes: plan and prepare for operations; operate the grader; and carry out post-operational procedures.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, in underground mines within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting wheel grader operations in underground mine 1.2. Obtain, interpret and clarify ***work requirements and procedures*** for the satisfactory completion of the allocated job 1.3. Access, interpret and apply ***geological*** and ***survey data*** required to complete the allocated job 1.4. ***Inspect*** and ***prepare work area*** in coordination with others 1.5. Identify, manage and report ***potential hazards and risks*** 1.6. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.7. Select personal protective equipment appropriate for work activities
2. Operate grader	2.1. Carry out ***pre-start***, ***start-up***, ***park-up and shutdown procedures*** 2.2. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.3. Conduct, control and monitor operations within the equipment limitations 2.4. Act on or report ***monitoring systems and alarms*** 2.5. Recognise and respond to ***hazardous and emergency situations*** 2.6. Complete work in accordance with the agreed ***work requirements*** and within the operating capacity of the allocated equipment
3. Carry out post-operational procedures	3.1. Inspect, fault find and report faults 3.2. Carry out routine ***operator servicing***, ***maintenance and housekeeping tasks*** 3.3. Maintain and process ***records and reports***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct grader operations in underground mine:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical and environmental information
- apply equipment records maintenance procedures
- apply diagnostic techniques
- apply environmental requirements
- apply procedures for disposal of environmentally sensitive fluids and materials
- apply techniques to batter, box out, construct drains, interpret ground conditions, layer, level and mark out
- use hand and power tools
- apply vehicle refuel procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct grader operations in underground mine:

- site and equipment safety requirements, including: isolation procedures, underground procedures, driving regulations, rules and conventions
- grader equipment characteristics, technical capabilities, limitations
- grader operational procedures and checks, including: equipment parking, start-up and shutdown procedures
- grader maintenance systems and procedures
- basic geological and survey data
- site environmental requirements and constraints related to grader operations
- primary and secondary ventilation
- road construction sequence
- road maintenance procedures
- refuelling vehicle

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting wheel grader operations in underground mine • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of wheel grader operations in underground mine • working with others to undertake and complete wheel grader operations in underground mine that meets all of the required outcomes • consistent timely completion wheel grader operations in underground mine that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete wheel grader operations in underground mine

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements and procedures may come from briefings, handovers, and work orders and may be written or verbal, formal or informal, depending on the complexity of the process and may include:	• ventilation/gas data • product identification • nature and scope of tasks • quality of finished works • achievement targets • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • broken ground • water tables or other water sources • wet and dry areas • degree of compaction
Survey data may include relevant site-specific information in	• floor heights • ramp and floor grades

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relation to:	• underground workings and void

Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection
	• determination of appropriate path of movement for loads and equipment/vehicles
	• floor clean up to specified levels and grade requirements
	• selection and implementation of environmental control measures

Potential hazards and risks may include:	• mount dismount injuries
	• run away
	• poor ventilation
	• toxic fumes
	• water
	• over head surfaces and obstacles
	• installed services
	• damaged or defective pressurise hoses and fastenings
	• abandoned equipment
	• chemicals
	• contaminants
	• holes and pot holes
	• personnel
	• unsafe ground
	• vehicles
	• dust and noise
	• conveyors
	• stored energy which may include:
	  • engine components
	  • radiators and cooling systems
	  • hydraulic tanks and reservoirs
	  • air tanks and reservoirs
	  • hydraulic hoses
	  • air hoses
	  • tires
	  • air conditioning components

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	• electrical components • braking systems • centrifugal forces
Coordination requirements may include with:	• other mobile plant operators • processing plant operators • maintenance personnel • service vehicle operators • contractors • inspectors • supervisors • visitors
Pre-start and start-up procedure may include:	• external check of the machine • inspection of attachments to ensure security and identify defects • selection, removing and fitting of attachments • checking of fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • carry out lubrication • checking of display instrumentation and gauges (indicators, gauges, laser levels), computer systems • inspection of air filter restriction indicator • inspection and checking of cab (horn, lights, air conditioner) • testing of engine and stop engine lights • testing visual and audio warning devices and lights • checking instruments and control lever • reporting of defects and damage
Park-up and shutdown procedure may include:	• secure equipment as required by site procedures • render attachments safe • clear access ways
Operating techniques may include:	• manoeuvring • braking • blade control and application • ripper control and application • attaching, securing, lifting, carrying and placing materials • towing • observing site speed limits

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	• working safely around:
	  • powerlines and other services
	  • other machines and personnel
	  • live stockpiles

Changing work conditions may include variations in:	• materials, • contamination • traffic conditions • light conditions
Monitoring systems and alarms may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • fuel filter • parking brake • retarder • service meter • speedometer/odometer • steering filters • tachometer • torque converter • oil temperature • transmission filter • voltmeter • water temperature
Hazardous and emergency situations may include:	• motor vehicle accidents • powerlines and other services • dust and noise • ventilation problems • toxic fumes • water in-rush • falling rock • tyre fires
Operator service, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• cleaning • checking fluid levels • greasing • tightening loose fittings • filter changes
Records and reports may include:	• fuel usage • computer readings • end of shift documentation • supplies logs

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	• work logs stockpile information

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO308B Conduct tracked dozer operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting tracked dozer operations in the mining and extractive industries. It includes planning and preparing for operations, operating the dozer, carrying out post-operational procedures.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting tracked dozer operations 1.2. Obtain, interpret and clarify ***work requirements and procedures*** for the satisfactory completion of the allocated job 1.3. Access, interpret and apply ***geological*** and ***survey data*** required to complete the allocated job 1.4. ***Inspect and prepare work area*** in coordination with others 1.5. Identify, manage and report ***potential hazards and risks*** 1.6. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.7. Select personal protective equipment appropriate for work activities
2. Operate the dozer	2.1. Carry out ***pre-start***, ***start-up***, ***park-up and shutdown procedures*** 2.2. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.3. Conduct, control and monitor operations within the equipment limitations 2.4. Connect and tow or push equipment and plant safely and in accordance with the authorised equipment and connection capacity 2.5. Act on or report ***monitoring systems and alarms*** 2.6. Recognise and respond to ***hazardous and emergency situations*** 2.7. Complete work in accordance with the agreed work requirements and within the operating capacity of the allocated equipment
3. Carry out post-operational procedures	3.1. Inspect, fault find and report faults 3.2. Carry out routine ***operator servicing***, ***maintenance and housekeeping tasks***

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	3.3. Maintain and process ***records and reports***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct tracked dozer operations:

- apply legislative, organisation and site requirements and procedures
- apply site safety requirements
- access, interpret and apply technical information
- apply equipment records maintenance procedures
- apply diagnostic techniques
- use relevant hand tools
- apply environmental requirements
- apply procedures for disposal of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- work wearing personal protective equipment
- interpret plans, reports, maps, specifications
- apply manual lifting techniques
- organise work tasks
- work in a team

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct tracked dozer operations:

- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements
- site communication procedures
- site product characteristics
- basic site geological and survey data
- site operational procedures
- dozer operational procedures and techniques (including towing and pushing)
- dozer maintenance systems and procedures
- dozer characteristics, technical capability and limitations
- hazard identification and response procedures
- site record keeping requirements

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- site personal protective equipment requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting tracked dozer operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of tracked dozer operations • working with others to undertake and complete tracked dozer operations that meet all of the required outcomes • consistent timely completion of tracked dozer operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete tracked dozer operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements and procedures may come from briefings, handovers, and work orders and may be written or verbal, formal or informal, depending on the complexity of the process and may include:	• material identification • nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • broken ground • water tables or other water sources • wet and dry areas • degree of compaction
Survey data may include relevant site-specific information in relation to:	• floor heights • bench heights and widths • ramp and floor grades • road profile requirements

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	• finished work tolerances • underground workings and voids

Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection
	• determination of appropriate path of movement for loads and equipment/vehicles
	• floor clean up to specified levels and grade requirements
	• selection and implementation of environmental control measures

Potential hazards and risks may include:	• installed services
	• damaged or defective pressurised hoses and fastenings
	• abandoned equipment
	• adjoining pit walls or structures
	• adverse weather conditions (electrical storms, floods, fires)
	• chemicals
	• contaminants
	• ancillary equipment
	• fences
	• holes and pot holes
	• over-hanging rocks
	• personnel
	• unsafe ground
	• unstable faces
	• vehicles
	• powerlines
	• dust and noise
	• conveyors
	• overhead services
	• stored energy which may include:
	  • engine components
	  • radiators and cooling systems
	  • hydraulic tanks and reservoirs
	  • air tanks and reservoirs
	  • hydraulic hoses

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	• air hoses • air conditioning components • electrical components • braking systems • centrifugal forces
Coordination requirements may include with:	• other mobile plant operators • processing plant operators • maintenance personnel • water truck operators • service vehicle operators • crane and float operators • contractors • inspectors • supervisors • visitors • use of 2-way radios
Pre-start and start-up procedure may include:	• external check of the machine • inspection of attachments to ensure security and identify defects • selection, removing and fitting of attachments • checking of fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • carry out lubrication • checking of display instrumentation and gauges (indicators, gauges, laser levels), computer systems • inspection of air filter restriction indicator • inspection and checking of cab (horn, lights, air conditioner) • testing of engine and stop engine lights • testing visual and audio warning devices and lights • checking instruments and control lever • reporting of defects and damage
Park-up and shutdown procedure may include:	• secure equipment as required by site procedures • render attachments safe • clear access ways
Operating techniques may include:	• manoeuvring • blade control and application • ripper control and application

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	• towing
	• pushing
	• building and maintaining stockpiles
	• attaching, securing, lifting, carrying and placing materials
	• driving machines on to floats
	• observing site speed limits
	• working safely around:
	  • high bench walls
	  • overhead powerlines
	  • other machines and personnel
	  • live stockpiles

Changing work conditions may include variations in:	• bulk material grades • height of stockpiles • height of walls • materials • contamination • materials handling facilities • weather conditions • light conditions (including day and night) • broken ground • degree of compaction • location of water table • slope of working surface • stable ground (compaction) amount of scale • wet and dry • working over old underground workings and voids
Monitoring systems and alarms may include:	• brake air pressure • oil temperature • computer indicators • engine oil pressure • fuel filter • parking brake • braking • service meter • speedometer/odometer • steering filters • tachometer • torque converter • transmission filter • voltmeter

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	• water temperature
Hazardous and emergency situations may include:	• powerlines and other overhead services • dust and noise • face overhangs • live stockpile
Operator service, **maintenance and housekeeping tasks** are those established and authorised for the site and may include:	• cleaning • authorised servicing • monitoring, recording and reporting of faults • conduct of authorised minor replacements • provision of assistance to maintenance personnel during maintenance and repair activities
Records and reports may include:	• fuel usage • computer readings • end of shift documentation • supplies logs • work logs stockpile information • quality information • despatch details

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO309A Conduct wheeled dozer operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting wheeled dozer operations in resources and infrastructure industries. It includes: planning and preparing for operations; operating wheeled dozers; and carrying out operator maintenance.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to wheeled ***dozer operations*** 1.2. Obtain, interpret and clarify/confirm ***work requirements*** in the form of shift briefings, handover details or work orders before proceeding 1.3. Access, interpret and apply ***geological and survey data*** required to complete the allocated work 1.4. Access and apply ***safety information and requirements*** throughout the work
2. Operate wheeled dozer	2.1. Resolve ***coordination*** activities with others at the site prior to commencement of, and during the work activity 2.2. Carry out pre-start, start-up, park-up and shutdown procedures 2.3. Control speed and articulated steering of the wheeled dozer during tramming operations 2.4. Use dozer controls and functions effectively, including manoeuvre, blade and ripper to complete specified tasks 2.5. Carry out towing of equipment and plant safely and in accordance with authorised equipment and/or connection capabilities 2.6. Maintain safe grip, traction and productivity in varied ***operating conditions*** 2.7. Act on or report monitoring systems and alarms 2.8. Recognise and respond to hazardous and emergency situations 2.9. Complete work in accordance with the agreed plan and outcomes and within the operating capabilities of the allocated equipment
3. Carry out operator maintenance	3.1. Carry out dozer inspections and fault-finding 3.2. Carry out authorised routine operational servicing, lubrication and housekeeping tasks

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	3.3. Carry out authorised minor maintenance 3.4. Process records

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct wheeled dozer operations:

- apply legislative, manufacturer's, organisation and site requirements and procedures
- access, interpret and apply technical information
- maintain equipment records
- use relevant hand tools
- apply problem solving techniques
- apply basic diagnostic techniques
- apply equipment operating procedure
- apply effective communication techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct wheeled dozer operations:

- site and equipment safety requirements
- site operational procedures
- wheeled dozer characteristics, technical capabilities and limitations
- wheeled dozer operational procedures
- wheeled dozer instrumentation and controls
- wheeled dozer maintenance systems and procedures
- basic geological and survey data
- hazard identification and response procedures
- site environmental requirements and constraints related to dozer operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting wheeled dozer operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of wheeled dozer operations • working with others to undertake and complete wheeled dozer operations that meet all of the required outcomes • consistent timely completion of wheeled dozer operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete wheeled dozer operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Dozer operations/tasks may include:	• ripping
	• pushing and preparing overburden
	• ripping and pushing may include:
	  • working under high walls
	  • working in cable areas
	  • highwall chaining
	• supporting other equipment
	• trimming or cutting
	• inter burden and coal handling
	• bench and pad preparation
	• maintenance and civil works
	• working in dumps which may include:
	  • creation of windrows
	  • dump establishment
	• civil works which may include:
	  • road works
	  • contours
	  • batters
	  • rehabilitation and drainage
	  • final landform and the interpretation of associated survey pegs
	  • sealing tailing dams
	• towing and pushing which may include:
	  • lighting plants
	  • pumps

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	• cable boats • towers • sleds • transformers • other equipment

Work requirements may include:	• product identification
	• nature and scope of tasks
	• achievement targets
	• operational conditions
	• obtaining permits required
	• site layout
	• out-of-bounds areas
	• worksite inspection requirements
	• lighting conditions
	• plant or equipment defects
	• hazards and potential hazards
	• coordination requirements or issues
	• shift details, including:
	  • the plant identification/allocation
	  • working conditions
	  • defects to equipment

Geological data may include relevant site specific information in relation to:	• material type and characteristics • faults and joints • coal seams • water tables or other water sources
Survey data may include relevant site specific information in relation to:	• floor heights • bench widths • grades • laser levelling • set out • GPS control
Safety information may include:	• legislation and regulations • relevant Australian standards • management systems and plans • OHS policy • code of practice • safe working procedures (or equivalent)
Specific **safety requirements** are to include:	• boarding and disembarkation procedures • operational signal procedures • implement lowering and lifting

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Coordination with others may include:	• other earthmoving equipment • water carts or trucks • materials handling equipment • light vehicles • lighting plant • use of 2-way radios • reporting defects either verbally or in writing • hand signal
Operating conditions may include:	• visibility day and night • prevailing winds • wet and slippery conditions • loose materials • fog • dust

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO310B Conduct grader operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting grader operations in the mining and extractive industries. It includes planning and preparing for operations, operating graders, carrying out post-operational procedures.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting grader operations 1.2. Obtain, interpret and clarify ***work requirements and procedures*** for the satisfactory completion of the allocated job 1.3. Access, interpret and apply ***geological*** and ***survey data*** required to complete the allocated job 1.4. ***Inspect and prepare work area*** in coordination with others 1.5. Identify, manage and report ***potential hazards and risks*** 1.6. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.7. Select personal protective equipment appropriate for work activities
2. Operate grader	2.1. Carry out ***pre-start***, ***start-up***, ***park-up and shutdown procedures*** 2.2. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.3. Conduct, control and monitor operations within the equipment limitations 2.4. Act on or report ***monitoring systems and alarms*** 2.5. Recognise and respond to ***hazardous and emergency situations*** 2.6. Complete work in accordance with the agreed work requirements and within the operating capacity of the allocated equipment
3. Carry out post-operational procedures	3.1. Inspect, fault find and report faults 3.2. Carry out routine ***operator servicing***, ***maintenance and housekeeping tasks*** 3.3. Maintain and process ***records and reports***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct grader operations:

- apply legislative, organisation and site requirements and procedures
- apply levelling techniques
- apply drain construction techniques
- apply windrow form and carry techniques
- apply equipment and plant towing procedures
- apply diagnostic techniques
- apply driving techniques
- apply hazardous goods handling techniques
- interpret plans, reports, maps, specifications
- apply lifting techniques
- organise work tasks
- apply defect reporting requirements
- apply safe work practices
- apply communications equipment procedures
- apply computer systems procedures
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct grader operations:

- emergency procedures
- environmental and heritage procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- towing techniques
- geological and technical data
- grading procedures
- hazardous goods procedures and consequences of spills
- isolation procedures
- mine operational system
- night and day working procedures
- OHS procedures
- open cut procedures

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• operational procedures and checks • road rules • shutdown procedures • site procedures • site safety requirements • start-up procedures • surface maintenance techniques

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting grader operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of grader operations • working with others to undertake and complete grader operations that meet all of the required outcomes • consistent timely completion of grader operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete grader operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements and procedures may come from briefings, handovers, and work orders and may be written or verbal, formal or informal, depending on the complexity of the process and may include:	• product identification • nature and scope of tasks, • quality of finished works • achievement targets, • operational conditions, • obtaining permits required • site layout, • out of bounds areas, • worksite inspection requirements, • lighting conditions, • plant or equipment defects, • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • broken ground • water tables or other water sources • wet and dry areas • degree of compaction
Survey data may include relevant site-specific information in relation to:	• floor heights • bench heights and widths • ramp and floor grades

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	• underground workings and voids

Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection
	• determination of appropriate path of movement for loads and equipment/vehicles
	• floor clean up to specified levels and grade requirements
	• selection and implementation of environmental control measures

Potential hazards and risks may include:	• installed services
	• damaged or defective pressurise hoses and fastenings
	• abandoned equipment
	• adjoining pit walls or structures
	• adverse weather conditions (electrical storms, floods, fires)
	• chemicals
	• contaminants
	• ancillary equipment
	• fences
	• holes and pot holes
	• over-hanging rocks
	• personnel
	• unsafe ground
	• unstable faces
	• vehicles
	• powerlines
	• dust and noise
	• conveyors and other fixed plant
	• overhead structures and services
	• stored energy which may include:
	  • engine components
	  • radiators and cooling systems
	  • hydraulic tanks and reservoirs
	  • air tanks and reservoirs
	  • hydraulic hoses
	  • air hoses

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	• tires • air conditioning components • electrical components • braking systems • centrifugal forces
Coordination requirements may include with:	• other mobile plant operators • processing plant operators • maintenance personnel • water truck operators • service vehicle operators • crane and float operators • contractors • inspectors • supervisors • visitors
Pre-start and start-up procedure may include:	• external check of the machine • inspection of attachments to ensure security and identify defects • selection, removing and fitting of attachments • checking of fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • carry out lubrication • checking of display instrumentation and gauges (indicators, gauges, laser levels), computer systems • inspection of air filter restriction indicator • inspection and checking of cab (horn, lights, air conditioner) • testing of engine and stop engine lights • testing visual and audio warning devices and lights • checking instruments and control lever • reporting of defects and damage
Park-up and shutdown procedure may include:	• secure equipment as required by site procedures • render attachments safe • clear access ways
Operating techniques may include:	• manoeuvring • braking • blade control and application • ripper control and application

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	• attaching, securing, lifting, carrying and placing materials
	• driving machines on to floats
	• towing
	• observing site speed limits
	• working safely around:
	  • overhead powerlines
	  • other machines and personnel
	  • live stockpiles

Changing work conditions may include variations in:	• materials, • contamination • traffic conditions • weather conditions • light conditions (including day and night)
Monitoring systems and alarms may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • fuel filter • parking brake • retarder • service meter • speedometer/odometer • steering filters • tachometer • torque converter • oil temperature • transmission filter • voltmeter • water temperature
Hazardous and emergency situations may include:	• motor vehicle accidents • powerlines and other overhead services • dust and noise • face overhangs • lighting strikes (potential tyre explosion) • tyre fires (isolation procedures)
Operator service, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• cleaning, • authorised servicing and the monitoring, • recording and reporting of faults • conduct of authorised minor replacements • provision of assistance to maintenance

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	personnel during maintenance and repair activities
Records and reports may include:	• fuel usage • computer readings • end of shift documentation • supplies logs • work logs stockpile information • quality information

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO311A Conduct haul truck operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting haul truck operations in the resources and infrastructure industries. It includes: planning and preparing for operations; operating the haul truck; loading, hauling and dumping materials; and carrying out post-operational procedures.

Application of the Unit

Haul trucks covered by this unit are off-highway trucks and may include: diesel-mechanical, diesel-electric, rigid body, articulated and belly dump. This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting haul truck operations 1.2. Obtain, interpret and clarify ***work requirements and procedures*** for the satisfactory completion of the allocated job 1.3. Access, interpret and apply ***geological*** and ***survey data*** required to complete the allocated job 1.4. ***Inspect and prepare work area*** in coordination with others 1.5. Identify, manage and report ***potential hazards and risks*** 1.6. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.7. Select personal protective equipment appropriate for work activities
2. Operate haul truck	2.1. Carry out ***pre-start***, ***start-up***, ***park-up and shutdown procedures*** 2.2. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.3. Conduct, control and monitor operations within the equipment limitations 2.4. Act on or report ***monitoring systems and alarms*** 2.5. Recognise and respond to ***hazardous and emergency situations***
3. Load, haul and dump materials	3.1. Position truck under all types of ***loading equipment*** 3.2. Carry out haulage operations 3.3. Carry out ***dumping operations*** 3.4. Complete work in accordance with the agreed plan and within the operating capacity of the allocated equipment
4. Carry out post-operational procedures	4.1. Inspect, fault find and report faults 4.2. Carry out routine ***operator servicing***, ***maintenance and housekeeping tasks***

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	4.3. Maintain and process ***records and reports***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct haul truck operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply equipment records maintenance procedures
- apply diagnostic techniques
- use hand tools
- apply procedures for disposal of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- work wearing personal protective equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct haul truck operations:

- emergency procedures
- environmental, cultural and heritage guidelines
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data
- hauling procedures
- hazardous goods procedures and consequences of spills
- isolation procedures
- loading procedures
- night and day working procedures
- OHS requirements
- fatigue management
- operational procedures and checks
- site road rules
- shutdown procedures
- site safety requirements
- start-up procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting haul truck operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of haul truck operations • working with others to undertake and complete haul truck operations that meet all of the required outcomes • consistent timely completion haul truck operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete haul truck operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements and procedures may come from briefings, handovers, and work orders and may be written or verbal, formal or informal, depending on the complexity of the process and may include:	• product identification • nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Geological data may include relevant site-specific information in relation to:	• rock and soil type and characteristics • faults and joints • broken ground • water tables or other water sources • wet and dry areas • degree of compaction
Survey data may include relevant site-specific information in relation to:	• floor heights • bench heights and widths • ramp and floor grades • underground workings and voids

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Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection
	• determination of appropriate path of movement for loads and equipment/vehicles
	• floor clean up to specified levels and grade requirements
	• selection and implementation of environmental control measures

Potential hazards and risks may include:	• installed services
	• damaged or defective pressurised hoses and fastenings
	• abandoned equipment
	• adjoining pit walls or structures
	• adverse weather conditions (electrical storms, floods, fires)
	• chemicals
	• contaminants
	• ancillary equipment
	• fences
	• holes and pot holes
	• over-hanging rocks
	• personnel
	• unsafe ground
	• unstable faces
	• other vehicles
	• powerlines
	• dust and noise
	• conveyors and other fixed plant
	• overhead structures and services
	• stored energy which may include:
	  • engine components
	  • radiators and cooling systems
	  • hydraulic tanks and reservoirs
	  • air tanks and reservoirs
	  • hydraulic hoses
	  • air hoses
	  • tyres

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	• air conditioning components • electrical components • braking systems • centrifugal forces
Coordination requirements may include with:	• other mobile plant operators • processing plant operators • maintenance personnel • water truck operators • service vehicle operators • crane and float operators • contractors • inspectors • supervisors • visitors
Pre-start and start-up procedure may include:	• external check of the machine • inspection of attachments to ensure security and identify defects • selection, removing and fitting of attachments • checking of fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • carry out lubrication • checking of display instrumentation and gauges (indicators, gauges, laser levels), computer systems • inspection of air filter restriction indicator • inspection and checking of cab (horn, lights, air conditioner) • testing of engine and stop engine lights • testing visual and audio warning devices and lights • checking instruments and control lever • reporting of defects and damage
Park-up and shutdown procedure may include:	• secure equipment as required by site procedures • render attachments safe • clear access ways
Operating techniques may include:	• manoeuvring • braking • bucket loading • single sided loading • double sided loading

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	• drive by loading
	• load carrying
	• haulage vehicle positioning
	• load discharge
	• building and maintaining stockpiles
	• blending materials
	• attaching, securing, lifting, carrying and placing materials
	• driving machines on to floats
	• towing
	• observing site speed limits
	• working safely around:
	  • overhead powerlines
	  • other machines and personnel
	  • live stockpiles

Changing work conditions may include variations in:	• bulk material grades • height of stockpiles • materials • contamination • haulage units • materials handling facilities • weather conditions • light conditions (including day and night)
Monitoring systems and alarms may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • fuel filter • parking brake • retarder • service meter • speedometer/odometer • steering filters • tachometer • torque converter • oil temperature • transmission filter • voltmeter • water temperature
Hazardous and emergency situations may include:	• powerlines and other overhead services • dust and noise

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	• face overhangs • lighting strikes (potential tyre explosion) • tyre fires (isolation procedures)
Loading equipment may include:	• shovels • wheel loaders • excavators • bins • conveyor belts • draglines
Dumping operations may be into:	• burden dumps • reject dumps • rehabilitation dumps • stockpiles • hoppers • bunkers • feeders • crushers
Operator servicing, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• cleaning • authorised servicing and the monitoring • recording and reporting of faults • conduct of authorised minor replacements • provision of assistance to maintenance personnel during maintenance and repair activities
Records and reports may include:	• fuel usage • computer readings • end of shift documentation • supplies logs • work logs stockpile information • quality information • despatch details

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMPO312A Conduct scraper operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting scraper operations in the mining and extractive industries. It includes: planning and preparing for operations; operating the scraper; loading, hauling and dumping materials; and carrying out post-operational procedures.

Application of the Unit

Scrapers are wheeled tractor-scrapers and may be standard models, twin powered scrapers, elevated or auger scrapers, push-pull scrapers. This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting scraper operations 1.2. Obtain, interpret and clarify ***work requirements and procedures*** for the satisfactory completion of the allocated job 1.3. Access, interpret and apply ***geological*** and ***survey data*** required to complete the allocated job 1.4. ***Inspect and prepare work area*** in coordination with others 1.5. Identify, manage and report ***potential hazards and risks*** 1.6. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.7. Select personal protective equipment appropriate for work activities
2. Operate scraper	2.1. Carry out ***pre-start***, ***start-up***, ***park-up and shutdown procedures*** 2.2. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.3. Conduct, control and monitor operations within the equipment limitations 2.4. Act on or report ***monitoring systems and alarms*** 2.5. Recognise and respond to ***hazardous and emergency situations***
3. Load, haul and dump materials	3.1. Efficiently load scraper bowl with ***material*** 3.2. Carry out haulage operations 3.3. Efficiently and effectively dump material 3.4. Complete work in accordance with the agreed and within the operating capacity of the allocated equipment
4. Carry out post-operational procedures	4.1. Inspect, fault find and report faults 4.2. Carry out routine ***operator servicing***, ***maintenance and housekeeping tasks*** 4.3. Maintain and process ***records and reports***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct scraper operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply equipment records maintenance procedures
- apply diagnostic techniques
- use relevant hand tools
- apply procedures for disposal of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- work wearing personal protective equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct scraper operations:

- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements
- site communication procedures
- site product characteristics
- towing and pushing requirements and techniques
- site geological and survey data
- site operational procedures
- scraper pre-start, start-up, operating and shutdown procedures and techniques
- scraper characteristics, technical capability and limitations
- hazard identification and response procedures
- site record keeping requirements
- site personal protective equipment requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting scraper operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of scraper operations • working with others to undertake and complete scraper operations that meet all of the required outcomes • consistent timely completion of scraper operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete scraper operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements and procedures may come from briefings, handovers, and work orders and may be written or verbal, formal or informal, depending on the complexity of the process and may include:	• product identification • nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Geological data may include relevant site-specific information in relation to:	• material type and characteristics • faults and joints • broken ground • water tables or other water sources • wet and dry areas • degree of compaction

Survey data may include relevant site-specific information in relation to:	• floor heights
	• bench heights and widths
	• ramp and floor grades
	• underground workings, voids or services
	• work circuit, which may include:
	  • pick-up areas
	  • dump areas

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	• haul routes

Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection
	• determination of appropriate path of movement for loads and equipment/vehicles
	• floor clean up to specified levels and grade requirements
	• selection and implementation of environmental control measures

Potential hazards and risks may include:	• installed services
	• damaged or defective pressurise hoses and fastenings
	• abandoned equipment
	• adjoining pit walls or structures
	• adverse weather conditions (electrical storms, floods, fires)
	• chemicals
	• contaminants
	• ancillary equipment
	• fences
	• holes and pot holes
	• over-hanging rocks
	• personnel
	• unsafe ground
	• unstable faces
	• other vehicles
	• powerlines
	• dust and noise
	• conveyors and other fixed plant
	• overhead structures and services
	• stored energy which may include:
	  • engine components
	  • radiators and cooling systems
	  • hydraulic tanks and reservoirs
	  • air tanks and reservoirs
	  • hydraulic hoses
	  • air hoses

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	• tires • air conditioning components • electrical components • braking systems • centrifugal forces
Coordination requirements may include with:	• other mobile plant operators • processing plant operators • maintenance personnel • water truck operators • service vehicle operators • crane and float operators • contractors • inspectors • supervisors • visitors
Pre-start and start-up procedure may include:	• external check of the machine • inspection of attachments to ensure security and identify defects • selection, removing and fitting of attachments • checking of fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • carry out lubrication • checking of display instrumentation and gauges (indicators, gauges, laser levels), computer systems • inspection of air filter restriction indicator • inspection and checking of cab (horn, lights, air conditioner) • testing of engine and stop engine lights • testing visual and audio warning devices and lights • checking instruments and control lever • reporting of defects and damage
Park-up and shutdown procedures are to include ensuring that:	• vehicle/equipment is secured as required by site procedures • attachments are rendered safe • access ways are clear
Operating techniques may include:	• loading • load carrying • load discharge • equipment positioning

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	• towing and pushing
	• observing site speed limits
	• working safely around:
	  • overhead powerlines
	  • other machines and personnel
	  • live stockpiles

Changing work conditions may include variations in:	• grades • ground conditions • degree of compaction • wet and dry ground • height of faces • materials • weather conditions • varying light conditions
Monitoring systems and alarms may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • fuel filter • parking brake • retarder • service meter • speedometer/odometer • steering filters • tachometer • torque converter • oil temperature • transmission filter • voltmeter • water temperature
Hazardous and emergency situations may include:	• powerlines • dust • noise • conveyors • overhead services • lighting strikes (potential tyre explosion) • tyre fires (isolation procedures)
Materials may include:	• top soil • overburden • sand • gravel

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	• mud • coal • oxidised waste • rejects • road base • rubbish sulphide rock fill • tailings
Operator service, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• cleaning, • authorised servicing and the monitoring, • recording and reporting of faults • conduct of authorised minor replacements • provision of assistance to maintenance personnel during maintenance and repair activities
Records and reports may include:	• fuel usage • computer readings • end of shift documentation • supplies logs • work logs stockpile information • quality information • despatch details

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO313B Conduct face loader operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting face loader operations in the extractive and metalliferous mining industries. It includes: planning and preparing for operations; operating wheel loaders; and carrying out post-operational procedures.

Application of the Unit

Front end loaders are either articulated or rear wheel steer wheel loaders and may include diesel-electric or diesel-mechanical, and do not include integrated tool carriers. This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***face loader operations*** 1.2. Access, interpret and clarify ***geological and survey data*** required to complete the allocated work 1.3. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations 1.4. ***Inspect and prepare work area*** in ***coordination with others***
2. Operate wheel loader	2.1. Resolve coordination requirements with others at the site prior to commencing and during work activities 2.2. Carry out ***pre-start***, ***start-up***, ***park-up and shutdown procedures*** 2.3. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.4. Conduct, control and monitor operations within the equipment limitations 2.5. Distribute bulk materials into ***haulage units*** to ensure maintenance of the stability and maximum load requirements of the haul unit 2.6. Load bulk materials into ***materials handling equipment*** 2.7. Carry out ***dumping and stockpiling operations*** 2.8. Connect and tow equipment and plant safely and in accordance with the authorised equipment and connection capacity 2.9. Act on or report monitoring systems and alarms 2.10. Recognise and respond to ***hazardous and emergency situations*** 2.11. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the allocated equipment

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3. Carry out post-operational procedures	3.1. Inspect, fault find and report faults 3.2. Carry out authorised operational maintenance, servicing, lubricating and housekeeping tasks 3.3. Process records and reports

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct face loader operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply equipment records maintenance requirements
- apply diagnostic techniques
- use relevant hand tools
- apply procedures for disposal of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- work wearing personal protective equipment

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct face loader operations:

- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements
- site communication procedures
- site product characteristics
- towing requirements and techniques
- site geological and survey data
- site operational procedures
- front end loader pre-start, start-up, operating and shutdown procedures and techniques
- front end loader characteristics, technical capability and limitations
- hazard identification and response procedures
- site record keeping requirements
- site personal protective equipment requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting face loader operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of face loader operations • working with others to undertake and complete the face loader operations that meet all of the required outcomes • consistent timely completion of face loader operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the face loader operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Face loading operations may include from:	• blast muck piles • sedimentary deposit faces
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • water tables or other water sources
Survey data may include relevant site-specific information in relation to:	• floor heights • bench widths • grades
Work requirements may come from briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Inspect and prepare work area may include:	• identification of hazards • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs

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	• selection of appropriate equipment to ensure personnel safety and protection • determination of appropriate path of movement for loads and equipment/vehicles • floor clean up to specified levels and grade requirements
Coordination with others may include with:	• yard persons • laboratory personnel • weighbridge personnel • mobile plant operators • processing plant operators • haulage unit operators • maintenance personnel
Pre-start and start-up procedures are to include:	• external check of the machine • checking and topping up fluid levels (including fuel) • lubrication • inspection of attachments to ensure security and defects • instrument and control lever checks • reporting defects and damage
Park-up and shutdown procedures are to include ensuring that:	• vehicle/equipment is secured as required by site procedures • attachments are rendered safe • access ways are clear

Operating techniques may include:	• bucket loading
	• load carrying
	• equipment positioning
	• load discharge
	• towing
	• observing site speed limits
	• working safely around:
	  • overhead powerlines
	  • other machines and personnel
	  • live stockpiles

Changing work conditions may include variations in:	• grades • height of faces • bench widths • materials • haulage units • materials handling facilities

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	• weather conditions • day and night
Haulage units may include:	• rigid dump trucks • articulated dump trucks • highway trucks
Materials handling equipment may include:	• feed hoppers • feeders • crushers
Dumping and stockpiling operations may include:	• oversized material • contaminated materials • material to be used for special purposes or products
Hazardous and emergency situations may include:	• powerlines and other overhead services • dust • noise • face overhangs • lighting strikes (potential tyre explosion) • tyre fires (isolation procedures)

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO314A Operate small open cut mine equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers operating equipment in small open-cut metalliferous mining operations. It includes: planning and preparing for operations; operating the equipment; and carrying out operator maintenance.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, in small open-cut operations within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to operating ***small open-cut mine equipment*** 1.2. Obtain, interpret and clarify ***work requirements*** before proceeding 1.3. Access, interpret and apply geological and survey data required to complete the allocated work 1.4. Access and apply ***safety information and procedures*** throughout the work
2. Operate equipment	2.1. Coordinate activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up and shutdown procedures 2.3. Change and operate ***ancillary attachments*** to the support equipment 2.4. Operate support equipment with or without ancillary attachments 2.5. Recognise and respond to hazardous and emergency situations 2.6. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the equipment
3. Carry out operator maintenance	3.1. Carry out equipment inspections and fault finding 3.2. Carry out authorised routine operational servicing, lubrication and housekeeping tasks 3.3. Carry out authorised minor maintenance 3.4. Provide authorised operator support during preparation for, and conduct of, major maintenance tasks 3.5. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to operate small open-cut mine equipment:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply procedures for matching equipment with tasks
- apply equipment records maintenance requirements
- use relevant hand tools
- apply eye-hand coordination
- apply diagnostic techniques
- apply environmental constraints related to the specified operations
- apply procedures for disposal of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to operate small open-cut mine equipment:

- site and equipment safety requirements
- equipment and ancillary attachment characteristics, technical capabilities and limitations
- specified equipment operational procedures
- specified equipment maintenance systems and procedures
- basic geological and survey data related to the specified operation
- site environmental requirements and constraints related to the support equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating small open-cut mine equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of small open-cut mine equipment • working with others to undertake and complete the operation of small open-cut mine equipment that meets all of the required outcomes • consistent timely completion of the operation of small open-cut mine equipment that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of small open-cut mine equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Small open-cut mine equipment may include:	• skid steer vehicle • tractor • backhoe • excavator • small front end loader • vibrator roller • sheafs foot roller • chain saw • telescopic handlers
Work requirements may be in the form of:	• shift briefings • handover details • work orders • support equipment identification/allocation • nature and scope of the tasks • achievement targets • working conditions • site lighting arrangements • defects to equipment • hazards and potential hazards • coordination requirements/issues
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice

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	• manufacturer's instructions • safe working or job procedures (or equivalents)
Ancillary attachments may include:	• buckets • auger • grass cutter • brush cutter • slasher • pneumatic hammer • shovel • plough • rotary hoe • any other commercially or site produced attachment

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO315A Conduct tractor operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting tractor operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating the tractor; selecting, removing and fitting attachments; relocating the tractor; and carrying out machine operator maintenance and cleaning up.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction

Tractors must be registered to drive and operate on public roads.

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting ***tractor operations*** 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select plant, tools and equipment to carry out tasks that are consistent with the requirements of the job and check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan to the allotted task
2. Conduct machine pre-operational checks	2.1. Carry out pre-start, start-up, park and shutdown procedures 2.2. Check ***tractor controls and functions*** for serviceability and rectify or report any faults
3. Operate tractor	3.1. Identify site hazards associated with tractor operations and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for tractor to achieve optimum output while achieving specified tolerances 3.3. Operate tractor to work instructions
4. Select, remove and fit attachments	4.1. Select ***attachment*** for the task 4.2. Remove and fit attachment 4.3. Test attachment to ensure correct fitting and operation 4.4. Use attachment in accordance with recommendations and design limits 4.5. Clean and store removed attachments in designated location
5. Relocate tractor	5.1. Move tractor safely between worksites,

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	observing relevant codes and traffic management requirements 5.2. Prepare tractor for relocation
6. Carry out machine operator maintenance	6.1. ***Safely park***, shutdown and prepare tractor for maintenance 6.2. Conduct inspection and fault finding 6.3. Remove and replace defective parts safely and in accordance with instructions 6.4. Carry out regular ***programmed maintenance*** tasks
7. Clean up	7.1. Clear work area and dispose of or recycle ***materials*** 7.2. Clean, check, maintain and store plant, ***tools and equipment***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct tractor operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply tractor and attachment operating techniques
- interpret drawings and sketches
- apply machine attachments changing procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct tractor operations:

- tractor types, characteristics, technical capabilities and limitations
- site and equipment safety requirements
- tractor and attachment operating techniques related to essential tasks
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials characteristics
- materials safety data sheet and materials handling methods
- project quality requirements
- civil construction terminology
- methods of changing machine attachments
- safe operating techniques in all terrain
- JSAs/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting tractor operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of tractor operations, which are to include:
	  • the minimum of three of the operations listed in the Range Statement, and
	  • the fitting and removal of at least one attachment
	• working with others to undertake and complete tractor operations that meet all of the required outcomes
	• consistent timely completion of tractor operations that safely, effectively and efficiently meet the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	  • the conducting of a minimum of three of the tasks listed in the Range Statement
	  • fitting and removal of at least one attachment
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the tractor operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **tractor**:	• is a self propelled, wheeled or tracked, commercial or agricultural machine • it may be a rigid or articulated, two wheel or all wheel drive • they are normally used for towing and/or providing a power take off (PTO) for specified attachments • are to include wheeled and may include tracked types
Tractor operations may include:	• post hole digging, spraying of herbicides/fertilisers, mowing/slashing, lifting, sweeping and blade based functions
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include: dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements may be from the site safety plan and organisational policies and procedures and include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures to recognise hazards and prevent risks associated with underground and overhead services, other machines,

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	personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • emergency procedures, including: emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation • hazards and risks, which may include: uneven/ unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials
Environmental requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Tractor controls and functions include:	• implements or other attachments, brakes and manoeuvrability
Attachments may include:	• a front blade, forklift, slasher, mower, auger, drag broom, power broom, loading platform, rotary hoe, concrete mixer, spraying equipment and disc plough
Safe parking practices is to include:	• ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement
Programmed maintenance is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults
Programmed maintenance may include:	• authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities
Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, timber, blended materials, organic materials, light scrub, grasses and bituminous mixes
Tools and equipment are to include:	• hand tools and maintenance equipment relevant to the particular tractor

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Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO316A Conduct self propelled compactor operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting self-propelled compactor operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating and relocating the machine; and carrying out operator maintenance and clean up.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***self-propelled compactor operations*** 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select plant, tools and equipment to carry out tasks that are consistent with the requirements of the job, and check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental protection requirements*** to the allotted task
2. Conduct machine pre-operational checks	2.1. Carry out Pre-start, start-up, park and shutdown procedures 2.2. Check, rectify or report ***compactor controls and functions*** for serviceability and any faults
3. Operate self-propelled compactor	3.1. Identify site hazards and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques to achieve optimum output while achieving specified tolerances 3.3. Operate compactor to work instructions in accordance with procedures
4. Relocate the self-propelled compactor	4.1. Move the self-propelled compactor safely between worksites, observing relevant codes and traffic management requirements 4.2. Prepare the self-propelled compactor for relocation
5. Carry out machine operator maintenance	5.1. ***Safely park***, shutdown and prepare the self-propelled compactor for maintenance 5.2. Conduct inspection and fault finding 5.3. Remove and replace defective parts safely and effectively 5.4. Carry out regular ***programmed***

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	maintenance tasks
6. Clean up	6.1. Clear work area and dispose of or recycle ***materials*** 6.2. Clean, check, maintain and store plant, ***tools and equipment***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct self-propelled compactor operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply compactor operating techniques
- interpret drawings and sketches

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct self-propelled compactor operations:

- self-propelled compactor types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- basic principles of soil compaction
- site and equipment safety requirements
- self-propelled compactor techniques related to essential tasks
- processes for interpreting engineering drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheet (MSDS) and materials handling methods
- project quality requirements
- civil construction terminology
- methods of changing machine attachments
- safe operating techniques in all terrain
- basic earthworks calculations
- civil construction activity sequences of road construction, earthworks and drainage
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting self-propelled compactor operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of self-propelled compactor operations: which are to include:
	  • towing
	  • levelling and compacting to construction specification and/or
	  • spreading, covering, levelling and compacting landfill materials (tip)
	• communicating and working with others to undertake and complete self-propelled compactor operations that meet all of the required outcomes
	• consistent timely completion of self-propelled compactor operations that safely, effectively and efficiently meet the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes which are to include:
	• towing
	• levelling and compacting to construction specification and/or
	• spreading, covering, levelling and compacting landfill materials (tip)
	• first hand testimonial evidence of the candidate's:
	  • communicating and working with others to undertake and complete self-propelled

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	compactor operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **compactor**:	• is a self-propelled, tamping foot drum, wheeled machine, used to compact a variety of types of construction materials • it can operate at relatively high speeds and may have a dozer blade mounted on the front-end of the machine allowing for dozing, filling and compacting versatility • the tamping feet on the wheels of the machine may vary in size, shape and depth
Self-propelled compactor operations are to include:	• towing and levelling and compacting to specification (construction) or to spread, level, cover and compact (tip) materials
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include: dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements may be from the site safety plan and organisational policies and procedures and include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures to recognise hazards and prevent risks associated with underground and overhead services, other machines,

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	personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • emergency procedures, including: emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation • hazards and risks, which may include: uneven/ unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials
Environmental protection requirements are obtained from project environmental management plan and may include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Compactor controls and functions include:	• implements or other attachments, brakes and manoeuvrability
Safe parking practices is to include:	• ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement
Programmed maintenance is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults
Programmed maintenance may include:	• authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities
Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, timber, blended materials, organic materials, light scrub, grasses and bituminous mixes • rock types may include metamorphic, igneous and sedimentary • landfill may include household and commercial waste and soil
Tools and equipment are to include:	• hand tools and maintenance equipment relevant to the particular compactor

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Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO317A Conduct roller operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting roller operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; selecting, removing and fitting attachments; operating and relocating the machine; and carrying out operator maintenance and clean up.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***roller operations*** in the civil construction industry 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select plant, tools and equipment to carry out tasks that are consistent with the requirements of the job, and check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental protection requirements*** to the allotted task
2. Conduct machine pre-operational checks	2.1. Carry out Pre-start, start-up, park and shutdown procedures 2.2. Check, rectify or report ***roller controls and functions*** for serviceability and any faults
3. Operate roller	3.1. Identify site hazards and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques to achieve optimum output while achieving specified tolerances 3.3. Operate roller to work instructions in accordance with procedures
4. Select, remove and fit attachments	4.1. Select ***attachment*** for the task 4.2. Remove and fit attachment 4.3. Test attachment to ensure correct fitting and operation 4.4. Use attachment in accordance with recommendations and design limits 4.5. Clean and store removed attachments in designated location
5. Relocate the roller	5.1. Move the roller safely between worksites, observing relevant codes and traffic management requirements

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	5.2. Prepare the roller for relocation
6. Carry out machine operator maintenance	6.1. ***Safely park***, shutdown and prepare the roller for maintenance 6.2. Conduct inspection and fault finding 6.3. Remove and replace defective parts safely and effectively 6.4. Carry out regular ***programmed maintenance*** tasks
7. Clean up	7.1. Clear work area and dispose of or recycle ***materials*** 7.2. Clean, check, maintain and store plant, ***tools and equipment***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct roller operations:

- apply legislative, organisation and site requirements and procedures
- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply attachment and roller operating techniques
- interpret drawings and sketches

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct roller operations:

- roller types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- basic principles of soil compaction
- site and equipment safety requirements
- rolling/compacting techniques related to essential tasks
- processes for interpreting drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheet and materials handling methods
- project quality requirements
- civil construction terminology
- methods of changing machine attachments
- safe operating techniques in all terrain
- basic earthworks calculations
- civil construction activity sequences of road construction, earthworks and drainage
- levelling techniques
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting roller operations in the civil construction industry • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of roller operations in the civil construction industry, which are to include: • operations performed in a minimum of three different soil types and include the mandatory tasks of: • compacting materials to pattern and density • sealing and finishing • the removal and fitting of at least one attachment • working with others to undertake and complete roller operations in the civil construction industry that meet all of the required outcomes • consistent timely completion of roller operations in the civil construction industry that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, which are to include operations performed in a minimum of three different soil types and include the mandatory tasks of:
	• compacting materials to pattern and density
	• sealing and finishing
	• the removal and fitting of at least one attachment
	  • consistently achieving the required outcomes

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	• first hand testimonial evidence of the candidate's: • working with others to undertake and complete roller operations in the civil construction industry
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **roller**:	• is a self propelled or towed machine used for the primary purpose of compacting a variety of types of construction materials • it may be rubber tyred, smooth drum, padded drum or grid/open face type and achieves compaction by one or a combination of the following compactive methods: static weight, kneading, vibration and impact • a grid roller is utilised to breakdown oversized construction materials • padded drums may include sheepsfoot, padfoot, tamping foot or wedge foot
Types of **rollers** may include:	• self propelled pneumatic tyred; self propelled smooth drum vibratory roller; self propelled padded drum vibratory roller; self propelled smooth drum roller (including 3 pointers); self propelled double drum vibratory roller; towed pneumatic multi-tyred roller; towed grid roller; towed smooth drum vibratory roller; towed padded drum vibratory roller.
Roller operations are to include:	• compacting materials to pattern and density, sealing and finishing • earthworks, pavement, bitumen and asphalt works
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include: dimensions, tolerances, standards of work and material

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	standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements may be from the site safety plan and organisational policies and procedures and include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures to recognise hazards and prevent risks associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • emergency procedures, including: emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation • hazards and risks, which may include: uneven/ unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials
Environmental protection requirements are obtained from project environmental management plan and may include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Attachments are to include:	• scraper bars and may include interchangeable drums, spray bars, wheel/drum brooms, drag brooms, padded drum attachments and blades
Roller controls and functions include:	• implements or other attachments, brakes and manoeuvrability
Safe parking practices is to include:	• ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement
Programmed maintenance is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults
Programmed maintenance may	• authorised minor replacements and the

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include:	provision of assistance to maintenance personnel during maintenance and repair activities
Materials may include:	• materials may include but are not limited to clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials and bituminous mixes • rock types may include metamorphic, igneous and sedimentary
Tools and equipment are to include:	• hand tools and maintenance equipment relevant to the particular roller

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO318B Conduct civil construction skid steer loader operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting skid steer loader operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating skid steer loaders; lifting, carrying and placing materials; selecting, removing and fitting attachments; relocating the skid steer loaders; carrying out machine operator maintenance; and cleaning up.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***skid steer loader tasks*** 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Obtain, identify and implement signage requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan, to the allotted task
2. Conduct machine pre-operational checks	2.1. Carry out pre-start, start-up, park and shutdown procedures 2.2. Check loader controls and functions, including implements or other attachments, brakes and manoeuvrability for serviceability and rectify or report any faults
3. Operate skid steer loader	3.1. Identify site hazards associated with skid steer loader operations and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for skid steer loader to achieve optimum output in accordance with manufacturer's design specifications while achieving specified tolerances 3.3. Operate loader to work instructions
4. Lift, carry and place materials	4.1. Conduct ***communication*** practices associated with transportation and lifting of ***materials*** in accordance with site specific practices and procedures, and confirm between parties 4.2. Select, attach and apply slings and lifting

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	gear in accordance with safe working load requirements as identified in legislation 4.3. Establish weight of load 4.4. Position machinery to ensure stability and locate to effectively shift materials according to job specifications 4.5. Shift load safely and effectively 4.6. Move load in accordance with conventional hand and available signals
5. Select, remove and fit attachments	5.1. Select ***attachment*** for the task 5.2. Remove and fit attachment 5.3. Test attachment to ensure correct fitting and operation as specified 5.4. Use attachment in accordance with recommendations and design limits 5.5. Clean and store removed attachments in designated location
6. Relocate the skid steer loader	6.1. Move skid steer loader safely between worksites, observing relevant codes and traffic management requirements 6.2. Prepare for relocation of skid steer loader
7. Carry out machine operator maintenance	7.1. Safely park, shutdown and prepare machine for ***maintenance*** 7.2. Conduct inspection and fault finding 7.3. Remove and replace defective parts safely and effectively 7.4. Carry out regular programmed maintenance tasks
8. Clean up	8.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 8.2. Clean, check, maintain and store plant tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct civil construction skid steer loader operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- perform safe working load calculations
- apply skid steer loader operating techniques
- apply processes for interpreting drawings and sketches
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- apply project quality requirements
- use civil construction terminology
- apply methods of changing machine attachments
- apply safe operating techniques in all terrain
- apply basic earthworks calculations
- apply levelling techniques

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct civil construction skid steer loader operations:

- skid steer loader types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- site and equipment safety requirements
- techniques for calculating safe working loads
- skid steer loader techniques related to essential tasks
- processes for interpreting drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheet and materials handling methods
- Project Quality Requirements
- civil construction terminology
- methods of changing machine attachments
- safe operating techniques in all terrain
- basic earthworks calculations

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- civil construction activity sequences of road construction, earthworks and drainage
- levelling techniques
- JSAs/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting civil construction skid steer loader operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of civil construction skid steer loader operations, including:
	  • in a minimum of two different soil types, and
	  • to include the mandatory tasks of stripping/ spreading topsoil and materials, lifting, loading vehicles, excavations, mixing materials and site clean-up
	• working with others to undertake and complete civil construction skid steer loader operations that meet all of the required outcomes
	• consistent timely completion of civil construction skid steer loader operations that safely, effectively and efficiently meet the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes including:
	• in a minimum of two different soil types, and
	• to include the mandatory tasks of stripping/ spreading topsoil and materials, lifting, loading vehicles, excavations, mixing materials and site clean-up
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to conduct civil construction skid steer loader operations

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **skid steer loader** is:	• a self-propelled wheeled machine in which steering is accomplished by skidding or reversing the wheels or tracks on one side of the machine. It has an integral front-mounted bucket-supporting structure and linkage, which loads or excavates through forward motion of the machine, and lifts, transports and discharges material
Skid steer loader may include:	• compacting, truck excavation, lifting and carrying materials, cutting batters and benches, rock breaking and any activities associated with attachments listed
Skid steer loader tasks are to include:	• stripping/spreading topsoil and materials, backfilling, lifting, loading vehicles, excavations, mixing materials and site clean-up
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements are to be:	• in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan
Safety requirements may	• protective clothing and equipment, use of tools and equipment, workplace environment and

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include:	safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • safe operating procedures which are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices which is to include but not be limited to ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, a safe distance from excavations, and secured from unauthorised access or movement • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Tools and equipment are to include:	• hand tools and maintenance equipment relevant to the particular loader
Environmental requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Communications practices are to include:	• verbal instructions and fault reporting and may include two-way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task • on-site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues

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Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials, organic materials, typical construction site materials/waste and bituminous mixes • rock types may include metamorphic, igneous and sedimentary • construction materials may include pegs, wire, cordage, safety equipment and other support equipments
Attachments may include:	• a front end loader (FEL), multipurpose 4:1 bucket, forklift, dozer blade, backhoe, auger, chain digger, power broom, profiler, tiller/mixer, rotary hoe, hammer, asphalt cutter/saw, concrete cutter/saw
Operator **maintenance** is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults. It may also include the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO319A Conduct backhoe/loader operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting backhoe/loader operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating backhoe/ loaders; lifting, carrying and placing materials; selecting, removing and fitting attachments; relocating the backhoe/ loaders; carrying out machine operator maintenance; and cleaning up.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to conduct ***backhoe/loader tasks*** 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan, to the allotted task
2. Conduct machine pre-operational checks	2.1. Carry out ***pre-start***, ***start-up***, ***park and shutdown procedures*** 2.2. Check machine controls and functions, including implements or other attachments, brakes and manoeuvrability for serviceability and rectify or report any faults
3. Operate backhoe/ loader	3.1. Identify site hazards associated with backhoe/loader operations and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for backhoe/loader to achieve optimum output in accordance with design specifications while achieving specified tolerances 3.3. Operate machine to work instructions
4. Lift, carry and place materials	4.1. Conduct ***communication*** practices associated with transportation and lifting of ***materials*** 4.2. Select and attach slings and lifting gear in accordance with safe working load requirements 4.3. Establish weight of load

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	4.4. Position and locate machinery to ensure stability to effectively shift materials according to job specifications 4.5. Shift load safely and effectively 4.6. Move load in accordance with conventional hand and audible signals
5. Select, remove and fit attachments	5.1. Select ***attachment*** for the task 5.2. Remove and fit attachment 5.3. Test attachment to ensure correct fitting and operation 5.4. Use attachment in accordance with recommendations and design limits 5.5. Clean and store removed attachments in designated location
6. Relocate the backhoe/ loader	6.1. Move backhoe/loader safely between worksites, observing relevant codes and traffic management requirements 6.2. Prepare backhoe/loader for relocation
7. Carry out machine operator maintenance	7.1. Park safely, shutdown and prepare machine for ***maintenance*** 7.2. Conduct inspection and fault finding 7.3. Remove, replace safely and effectively defective parts 7.4. Carry out regular programmed maintenance tasks
8. Clean up	8.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 8.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct backhoe/loader operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply techniques for calculating safe working loads
- apply backhoe/loader techniques related to essential tasks
- interpret drawings and sketches
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- interpret materials safety data sheet and materials handling methods
- apply project quality requirements
- use civil construction terminology
- apply methods of changing machine attachments
- apply safe operating techniques in all terrain
- carry out basic earthworks calculations
- apply levelling techniques
- interpret JSA's/Safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct backhoe/loader operations:

- backhoe/loader types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- site and equipment safety requirements
- techniques for calculating safe working loads
- backhoe/loader techniques related to essential tasks
- processes for interpreting drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheet and materials handling methods
- project quality requirements
- civil construction terminology
- methods of changing machine attachments

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- safe operating techniques in all terrain
- basic earthworks calculations
- civil construction activity sequences of road construction, earthworks and drainage
- levelling techniques
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting backhoe/loader operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of backhoe/ loader operations, including:
	  • in a minimum of two different soil types and
	  • to include the mandatory tasks: mixing materials, stripping/spreading topsoils and materials, trench excavation, backfilling, lifting and carrying materials, loading dump trucks, wagons, hoppers, chutes, and cutting/boxing
	• working with others to undertake and complete backhoe/ loader operations that meet all of the required outcomes
	• consistent timely completion of backhoe/loader operations that safely, effectively and efficiently meet the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• in a minimum of two different soil types and
	• the mandatory tasks: mixing materials, stripping/spreading topsoils and materials, trench excavation, backfilling, lifting and carrying materials, loading dump trucks, wagons, hoppers, chutes, and cutting/boxing
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:

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	• working with others to undertake and complete the backhoe/loader operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **backhoe/loader** is:	• a self-propelled wheeled machine with a main structural support designed to carry both a front-mounted bucket loading mechanism and a rear-mounted backhoe
Backhoe/loader tasks are to include:	• mixing materials, stripping/spreading topsoils and materials, trench excavation, backfilling, lifting and carrying materials, loading dump trucks, wagons, hoppers, chutes and cutting/boxing
Backhoe/loader tasks may include:	• scrub clearing, ripping, compacting, cutting, batters and benches, rock breaking, demolition and any activities associated with the attachments listed
A **skid steer loader** is:	• a self-propelled wheeled machine in which steering is accomplished by skidding or reversing the wheels or tracks on one side of the machine. It has an integral front-mounted bucket-supporting structure and linkage, which loads or excavates through forward motion of the machine, and lifts, transports and discharges material
Skid steer loader may include:	• compacting, truck excavation, lifting and carrying materials, cutting batters and benches, rock breaking and any activities associated with attachments listed
Skid steer loader tasks are to include:	• stripping/ spreading topsoil and materials, backfilling, lifting, loading vehicles, excavations, mixing materials and site clean

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	up
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements are to be:	• in accordance with State or Territory legislation and regulations, organisational safety policies and procedures, and project safety plan
Safety requirements may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • safe operating procedures which are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices which is to include but not be limited to ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Tools and equipment are to	• hand tools and maintenance equipment

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include:	relevant to the particular loader and may include lifting equipment
Environmental requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Communications practices are to include:	• verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task • on site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials, organic materials, typical construction site materials/waste and bituminous mixes • rock types may include metamorphic, igneous and sedimentary
Attachments may include:	• extending devices, tilt bucket, buckets, compaction wheel, ripper, plate compactor, rock breaker, auger, broom, mower/slasher, forklift, 4 in 1 bucket and free/rock grab
Operator **maintenance** is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults. It may also include the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMPO320B Conduct civil construction excavator operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct excavator operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating the machine; lifting, carrying and placing materials; selecting, removing and fitting attachments; relocating the machine; carrying out machine operator maintenance; and cleaning up.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction

Operator license issued by OHS authority may be required in some states or territories and some excavators must be registered to drive and operate on public roads.

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***excavator operations tasks*** 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Obtain, identify and implement signage requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identity, confirm and apply ***environmental*** protection requirements from the project environmental management plan, to the allotted task
2. Conduct machine preoperational checks	2.1. Carry out pre-start, start-up, park and shutdown procedures 2.2. Check excavator controls and functions, including implements or other attachments, brakes and manoeuvrability for serviceability and report or rectify any faults
3. Operate excavator	3.1. Identity site hazards associated with excavator operations and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for excavator to achieve optimum output in accordance with design specifications while achieving specified tolerances 3.3. Operate excavator to work instructions
4. Lift, carry and place materials	4.1. Conduct ***communication*** practices associated with transportation and lifting of ***materials*** 4.2. Establish weight of load 4.3. Select, attach and use slings and lifting gear in accordance with safe working load requirements

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	4.4. Position machinery ensuring stability and locate to effectively shift materials according to job specifications 4.5. Shift load safely and effectively 4.6. Move load in accordance with conventional hand and audible signals
5. Select, remove and fit attachments	5.1. Select ***attachment*** for the task 5.2. Remove and fit attachment according to manufacturers manual and site requirements 5.3. Test attachment to ensure correct fitting and operation 5.4. Use attachment in accordance with recommendations and design limits 5.5. Remove, clean and store attachments in designated location
6. Relocate the excavator	6.1. Move excavator safely between worksites, observing relevant codes and traffic management requirements 6.2. Prepare excavator for relocation
7. Carry out machine operator maintenance	7.1. Safely park-up, shutdown and prepare the machine for ***maintenance*** 7.2. Conduct inspection and fault finding 7.3. Remove and replace defective parts safely and effectively 7.4. Carry out regular programmed maintenance tasks
8. Clean up	8.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 8.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct excavator operations:

- apply legislative, organisation and site requirements and procedures
- apply basic principles of soil technology for civil works
- apply site and equipment safety requirements
- apply techniques for calculating safe working loads
- apply excavator and attachment operating techniques related to essential tasks
- interpret drawings and sketches
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- interpret materials safety data sheets and apply materials handling methods
- apply project quality requirements
- use civil construction terminology
- apply methods of changing machine attachments
- apply safe operating techniques in all terrain
- carry out basic earthworks calculations
- apply levelling techniques
- apply JSA's/Safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct excavator operations:

- excavator types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- site and equipment safety requirements
- techniques for calculating safe working loads
- excavator and attachment operating techniques related to essential tasks
- processes for interpreting drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- methods of changing machine attachments

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- safe operating techniques in all terrain
- basic earthworks calculations
- civil construction activity sequences of road construction, earthworks and drainage
- levelling techniques
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting excavator operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of excavator operations, including:
	  • in a minimum of two different soil types; and
	  • to include the mandatory tasks of loading, bulk excavation, backfilling, trench excavation, stockpiling, battering and benching
	• working with others to undertake and complete excavator operations that meet all of the required outcomes
	• consistent timely completion of excavator operations that safely, effectively and efficiently meet the required outcomes
	• laser guidance or ATS are not to be used to assist in control of the machine during assessment

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• in a minimum of two different soil types; and
	• to include the mandatory tasks of loading, bulk excavation, backfilling, trench excavation, stockpiling, battering and benching
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and

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	complete excavator operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
An **excavator** is:	• a self-propelled crawler or wheeled machine with an upper structure capable of a minimum of 360 degree rotation which excavates, elevates, swings and discharges material by the action of a bucket fitted to the boom and arm or telescoping boom, without moving the chassis or undercarriage during any part of the working cycle of the machine • are to include tracked and may include wheeled excavators
Excavator operations tasks are to include:	• loading, bulk excavation, backfilling, trench excavation, stockpiling, battering and benching
Excavator operations tasks may include:	• compacting materials, demolition, rock breaking, removal of trees and ripping, lifting materials, cutting/boxing, laying pipes, cut and fill, mixing materials, stripping/spreading topsoil and materials
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements are to be:	• in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan

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Safety requirements may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • safe operating procedures which are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices which is to include but not be limited to ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Tools and equipment are to include:	• hand tools and maintenance equipment relevant to the particular loader
Environmental requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Communications practices are to include:	• verbal instructions and fault reporting and may include 2-way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task • on site meeting processes may include notification/ scheduling (time, place, purpose),

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	task discussions and local coordination of procedural and operational issues
Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials, organic materials, typical construction site materials/waste and bituminous mixes • rock types may include metamorphic, igneous and sedimentary
Attachments may include:	• ripper/tyne, auger, tilt bucket, rock breaker, buckets, lifting device, vibrating compaction plate and compaction wheel
Operator **maintenance** is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults. It may also include the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO321B Conduct civil construction wheeled front end loader operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting wheeled front end loader operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating front end loaders; attaching, securing, lifting, carrying and placing materials; selecting, removing and fitting attachments; relocating the front end loader; carrying out machine operator maintenance; and cleaning up.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction

Operator licence issued by OHS authority may be required in some states or territories and wheeled loaders must be registered to drive and operate on public roads.

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***wheeled front end loader tasks*** 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Obtain, identify and implement signage requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan to the allotted task
2. Conduct machine pre-operational checks	2.1. Carry our pre-start, start-up, park and shutdown procedures 2.2. Check front end loader controls and functions, including implements or other attachments, brakes and manoeuvrability for serviceability, and rectify or report any faults
3. Operate front end loader	3.1. Identify site hazards associated with front end loader operations and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for front end loader to achieve optimum output in accordance with design specifications while achieving specified tolerances 3.3. Operate front end loader to work instructions
4. Attach, secure, lift, carry and place materials	4.1. Conduct ***communication*** practices associated with transportation and lifting of ***materials*** 4.2. Establish weight of load 4.3. Select, attach and use slings and lifting gear in accordance with safe working load

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	requirements 4.4. Position machinery to ensure stability and locate to effectively shift materials according to job specifications 4.5. Shift load safely and effectively 4.6. Move load in accordance with conventional hand and audible signals
5. Select, remove and fit attachments	5.1. Select ***attachment*** for the task 5.2. Remove and fit attachment 5.3. Test attachment to ensure correct fitting and operation 5.4. Use attachment in accordance with recommendations and design limits 5.5. Clean and store removed attachments in designated location
6. Relocate the front end loader	6.1. Move front end loader safely between worksites, observing relevant codes and traffic management requirements 6.2. Prepare front end loader for relocation
7. Carry out machine operator maintenance	7.1. Safely park, shutdown and prepare machine for ***maintenance*** 7.2. Conduct inspection and fault finding 7.3. Remove and replace defective parts safely and effectively 7.4. Carry out regular programmed maintenance tasks
8. Clean up	8.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 8.2. Clean, check, maintain and store plant tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct civil construction wheeled front end loader operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply techniques for calculating safe working loads
- apply front end loader and attachment operating techniques related to essential tasks
- interpret drawings and sketches
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- interpret materials safety data sheets and apply materials handling methods
- apply project quality requirements
- use civil construction terminology
- apply methods of changing machine attachments
- apply safe operating techniques in all terrain
- carry out basic earthworks calculations
- apply levelling techniques
- apply JSAs/Safe work method statement

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct civil construction wheeled front end loader operations:

- front end loader types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- site and equipment safety requirements
- techniques for calculating safe working loads
- front end loader and attachment operating techniques related to essential tasks
- processes for interpreting drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology

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- methods of changing machine attachments
- safe operating techniques in all terrain
- basic earthworks calculations
- civil construction activity sequences of road construction, earthworks and drainage
- levelling techniques
- JSAs/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting civil construction wheeled front end loader operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of civil construction wheeled front end loader operations, including:
	  • in a minimum of two different soil types; and
	  • to include the mandatory tasks of mixing materials, stripping/spreading topsoil and materials, loading, cutting/boxing, backfilling, lifting and carrying materials
	• working with others to undertake and complete civil construction wheeled front end loader operations that meet all of the required outcomes
	• consistent timely completion of civil construction wheeled front end loader operations that safely, effectively and efficiently meet the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• in a minimum of two different soil types; and
	• to include the mandatory tasks of mixing materials, stripping/spreading topsoil and materials, loading, cutting/boxing, backfilling, lifting and carrying materials
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete civil construction wheeled front

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	end loader operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **wheeled front end loader** is:	• a self-propelled wheeled machine with an integral front-mounted bucket-supporting structure and linkage with integral quick coupler • it loads or excavates through forward motion of the machine, and lifts, transports and discharges material
Front end loader tasks are to include:	• mixing materials, stripping/spreading topsoil and materials, loading, cutting/boxing, backfilling, lifting and carrying materials
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements are to be:	• in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan
Safety requirements may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment is to include that prescribed under legislation, regulation

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	and workplace policies and practices • safe operating procedures which are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices which is to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Tools and equipment are to include:	• hand tools and maintenance equipment relevant to the particular loader
Environmental requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Communications practices are to include:	• verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task • on site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials, organic materials, typical construction site materials/waste and bituminous mixes • rock types may include metamorphic, igneous and sedimentary

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Attachments are to include:	• a bucket (general purpose or multipurpose)
Attachments may include:	• rippers/scarifiers • and/or other attachments approved by the manufacturer
Operator **maintenance** is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults **It may also include** the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO322A Conduct civil construction tracked front end loader operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting tracked front end loader operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating the machine; lifting, carrying and placing materials; relocating the machine; carrying out machine operator maintenance; and cleaning up.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction

Operator license issued by OHS authority may be required in some states or territories and tracked loaders must be registered to drive and operate on public roads.

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***tracked front end loader tasks*** 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan, to the allotted task
2. Conduct machine pre-operational checks	2.1. Carry out ***pre-start***, ***start-up***, ***park and shutdown procedures*** 2.2. Check front end loader controls and functions, including implements or other ***attachments***, brakes and manoeuvrability for serviceability and rectify or report any faults
3. Operate front end loader	3.1. Identify site hazards associated with front end loader operations and safe operating techniques are used to minimise risk 3.2. Identify and apply operating techniques for front end loader to achieve optimum output in accordance with design specifications while achieving specified tolerances 3.3. Operate front end loader to work instructions
4. Attach, secure, lift, carry and place	4.1. Conduct ***communication*** practices associated with transportation and lifting of materials 4.2. Establish weight of load 4.3. Select , attach and use slings and lifting gear in accordance with safe working load

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	requirements 4.4. Position machinery to ensure stability and locate to effectively shift materials according to job specifications 4.5. Shift load safely and effectively 4.6. Move load in accordance with conventional hand and audible signals
5. Relocate the front end loader	5.1. Move front end loader safely between work sites, observing relevant codes and traffic management requirements 5.2. Prepare front end loader for relocation
6. Carry out machine operator maintenance	6.1. Safely park front, shutdown and prepared machine for ***maintenance*** 6.2. Conduct inspection and fault finding 6.3. Remove and replace defective parts safely and effectively 6.4. Carry out regular programmed maintenance tasks
7. Clean up	7.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 7.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct tracked front end loader operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply techniques for calculating safe working loads
- apply front end loader and attachment operating techniques related to essential tasks
- interpret drawings and sketches
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- interpret materials safety data sheets and apply materials handling methods
- apply project quality requirements
- use civil construction terminology
- apply methods of changing machine attachments
- apply safe operating techniques in all terrain
- carry out basic earthworks calculations
- apply levelling techniques
- apply JSA's/Safe work method statement requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct tracked front end loader operations:

- tracked front end loader types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- site and equipment safety requirements
- techniques for calculating safe working loads
- front end loader and attachment operating techniques related to essential tasks
- processes for interpreting drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology

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- methods of changing machine attachments
- safe operating techniques in all terrain
- basic earthworks calculations
- civil construction activity sequences of road construction, earthworks and drainage
- levelling techniques
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting tracked front end loader operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of tracked front end loader operations, including:
	  • in a minimum of two different soil types; and
	  • are to include the mandatory tasks of mixing materials, stripping/spreading topsoil and materials, loading, cutting/boxing, backfilling, lifting and carrying materials
	• working with others to undertake and complete tracked front end loader operations that meet all of the required outcomes
	• consistent timely completion of tracked front end loader operations that safely, effectively and efficiently meet the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• in a minimum of two different soil types; and
	• are to include the mandatory tasks of mixing materials, stripping/spreading topsoil and materials, loading, cutting/boxing, backfilling, lifting and carrying materials
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the tracked front end loader

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	operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **tracked front end loader** is:	• a self-propelled tracked machine with an integral front-mounted bucket-supporting structure and linkage, which loads or excavates through forward motion of the machine, and lifts, transports and discharges material
Tracked front end loader tasks are to include:	• mixing materials, stripping/spreading topsoil and materials, loading, cutting/boxing, backfilling, lifting and carrying materials
Tracked front end loader tasks may include:	• scrub clearing and ripping
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements are to be:	• in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan
Safety requirements may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances

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	• personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • safe operating procedures which are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices which is to include but not be limited to ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Tools and equipment are to include:	• hand tools, lifting and maintenance equipment relevant to the particular tracked loader
Environmental requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Attachments are to include:	• a bucket (general purpose or multipurpose) rippers/scarifiers and claw
Communications practices are to include:	• verbal instructions and fault reporting and may include 2-way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task • on site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials, organic materials,

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	typical construction site materials/waste and bituminous mixes • rock types may include metamorphic, igneous and sedimentary
Operator **maintenance** is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults **It may also include** the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO323A Conduct civil construction dozer operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting dozer operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating the machine; selecting, removing and fitting attachments; relocating the machine; carrying out machine operator maintenance; and cleaning up.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***dozer operations tasks*** 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan to the allotted task
2. Conduct machine pre-operational checks	2.1. Carry out pre-start, start-up, park and shutdown procedures 2.2. Check dozer controls for serviceability and functions, including implements or other attachments, brakes and manoeuvrability and rectify or report any faults
3. Operate dozer	3.1. Identify site hazards associated with dozer operations and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for dozer to achieve optimum output in accordance with design specifications while achieving specified tolerances 3.3. Operate dozer to work instructions
4. Select, remove and fit attachments	4.1. Select ***attachment*** for the task 4.2. Remove and fit attachment 4.3. Test attachment to ensure correct fitting and operation 4.4. Use attachment in accordance with recommendations and design limits 4.5. Remove, clean and store attachments in

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	designated location
5. Relocate the dozer	5.1. Move dozer safely between worksites, observing relevant codes and traffic management requirements 5.2. Prepare dozer for relocation
6. Carry out machine operator maintenance	6.1. Safely park, shutdown and prepare machine for ***maintenance*** 6.2. Conduct inspection and fault finding 6.3. Remove and replace defective parts safely and effectively 6.4. Carry our regular programmed maintenance tasks
7. Clean up	7.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 7.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct dozer operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply techniques for calculating safe working loads
- apply dozer and attachment operating techniques related to essential tasks
- interpret drawings and sketches
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- interpret materials safety data sheets and apply materials handling methods
- apply project quality requirements
- use civil construction terminology
- apply methods of changing machine attachments
- apply safe operating techniques in all terrain
- carry out basic earthworks calculations
- apply levelling techniques
- apply JSA's/Safe work method statement requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct dozer operations:

- dozer types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- site and equipment safety requirements
- techniques for calculating safe working loads
- dozer and attachment operating techniques related to essential tasks
- processes for interpreting drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- methods of changing machine attachments
- safe operating techniques in all terrain
- basic earthworks calculations

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- civil construction activity sequences of road construction, earthworks and drainage
- levelling techniques
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conduct dozer operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conduct dozer operations, including:
	  • in a minimum of two different soil types, and
	  • to include the mandatory tasks of stripping/spreading topsoil and materials, cut and fill, battering, stockpiling, bulk excavation, cutting drains, benching and backfilling
	• working with others to undertake and complete the conduct dozer operations that meet all of the required outcomes
	• consistent timely completion of conduct dozer operations that safely, effectively and efficiently meet the required outcomes
	• laser guidance or ATS are not to be used to assist in control of the machine during assessment

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• in a minimum of two different soil types, and
	• to include the mandatory tasks of stripping/spreading topsoil and materials, cut and fill, battering, stockpiling, bulk excavation, cutting drains, benching and backfilling
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:

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	• working with others to undertake and complete dozer operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **dozer**:	• is a self-propelled tracked or wheeled purpose designed machine with a blade mounted at the front end • are to include tracked and may include wheeled
Dozer tasks are to include:	• stripping/spreading topsoil and materials, cut and fill, battering, stockpiling, bulk excavation, cutting drains, benching and backfilling
Dozer tasks may include:	• land clearing, track rolling, ripping, push loading, scrapers, towing equipment, working in tandem, winching, boxing, mixing materials and constructing fire breaks
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements are to be:	• in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan
Safety requirements may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous

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	materials and substances • personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • safe operating procedures which are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices which is to include but not be limited to ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Tools and equipment are to include:	• hand tools and maintenance equipment relevant to the particular dozer
Environmental requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials, organic materials, typical construction site materials/waste and bituminous mixes • rock types may include metamorphic, igneous and sedimentary
Attachments may include:	• but not be limited to stick rakes, root rakes, push blade, angle blade, bull blade, power angle tilt blade, rippers, winch, tree pusher, cable plough, stump plough, power control unit and cable drum

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Operator **maintenance** is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults. It may also include the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO324A Conduct civil construction grader operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting grader operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating the machine; selecting, removing and fitting attachments; relocating the machine; carrying out machine operator maintenance; and cleaning up.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction

Operator license issued by OHS authority may be required in some states or territories and graders must be registered to drive and operate on public roads.

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***grader operations tasks*** 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Resolve coordination requirements with others at the site prior to commencing and during work activities 1.5. Identify, obtain and implement signage requirements from the project traffic management plan 1.6. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.7. Identity, confirm and apply ***environmental*** protection requirements from the project environmental management plan, to the allotted task
2. Conduct machine pre-operational checks	2.1. Carry out ***pre-start***, ***start-up***, ***park and shutdown procedures*** 2.2. Recognise and respond to hazardous and emergency situations as required 2.3. Check grader controls and functions, including implements or other attachments, brakes and manoeuvrability for serviceability and rectify or report any faults
3. Operate grader	3.1. Identify site hazards associated with grader operations and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for grader to achieve optimum output in accordance with design specifications while achieving specified tolerances 3.3. Operate grader to work instructions
4. Select, remove and fit attachments	4.1. Select ***attachment*** for the task

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	4.2. Remove and fit attachment 4.3. Test attachment to ensure correct fitting and operation 4.4. Use attachment in accordance with recommendations and design limits 4.5. Clean and store removed attachments in designated location
5. Relocate the grader	5.1. Move grader safely between worksites, observing relevant codes and traffic management requirements 5.2. Prepare grader for relocation
6. Carry out machine operator maintenance	6.1. Safely park, shutdown and prepare machine for ***maintenance*** 6.2. Conduct inspection and fault finding 6.3. Remove and replace defective parts safely and effectively 6.4. Carry our regular programmed maintenance and housekeeping tasks 6.5. Maintain and process records
7. Clean up	7.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 7.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct grader operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply grader operating techniques related to essential tasks, including:
  - apply cut and fill techniques
  - apply levelling techniques
  - construct drains
  - form and carry a windrow
  - tow equipment/plant
- apply processes for interpreting drawings and sketches
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- interpret materials safety data sheets and apply materials handling methods
- apply project quality requirements
- use civil construction terminology
- apply methods of changing machine attachments
- apply safe operating techniques in all terrain
- carry out basic earthworks calculations
- apply JSA's/Safe work method statement procedures
- apply diagnostic techniques
- apply operations directing techniques
- apply driving techniques
- apply hazardous goods handling techniques
- interpret plans, reports, maps, specifications
- apply lifting techniques
- organise work tasks
- apply defect reporting requirements
- apply safe work practices
- use communications equipment
- use computer systems
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used.

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This includes knowledge of the following, as required to conduct grader operations:

- site risk control procedures
- site and equipment health and safety procedures, including:
  - site isolation and traffic control responsibilities and authorities
  - materials safety data sheets (MSDS) and materials handling methods
  - JSA's/Safe work method statement
  - hazard identification and response procedures
  - site and project personal protective equipment requirements
- site and project environmental requirements and constraints
- site and project quality requirements
- site and project communication procedures
- site operational procedures
- civil construction activity sequences of road construction, earthworks and drainage
- civil construction terminology
- processes for interpreting drawings and sketches
- site soil and survey data
- basic principles of soil technology for civil works
- grader types, characteristics, technical capability and limitations
- grader pre-start, start-up, operating and shut-down procedures and techniques
- grader and attachment operating techniques related to essential tasks, including:
  - safe operating techniques in all terrain
  - levelling techniques
- operational, maintenance and basic diagnostic procedures
- methods of changing machine attachments
- site record keeping requirements
- basic earthworks calculations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting grader operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of grader operations, including:
	  • in a minimum of two different soil types and
	  • to include the mandatory tasks of cutting and maintaining drains, forming/upgrading/maintaining roads, mixing/ spreading materials, scarifying and ripping, cutting and trimming of batters and trimming of road sub-grades and pavements
	• working with others to undertake and complete grader operations that meet all of the required outcomes
	• consistent timely completion of grader operations that safely, effectively and efficiently meet the required outcomes
	• laser guidance or ATS are not to be used to assist in control of the machine during assessment

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• in a minimum of two different soil types, and
	• to include the mandatory tasks of cutting and maintaining drains, forming/upgrading/ maintaining roads, mixing/ spreading materials, scarifying and ripping, cutting and trimming of batters and trimming of road sub-grades and pavements
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:

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	• working with others to undertake and complete grader operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **grader**:	• is a self-propelled articulating or rigid framed wheeled machine, designed to cut, move and place construction materials using a centrally mounted blade and may include forward and/or rear mounted rippers/scarifiers • the blade and attachment controls are normally hydraulic; however, they may be mechanical
Grader tasks are to include:	• cutting and maintaining drains, forming/upgrading/maintaining roads, mixing/spreading materials, scarifying and ripping, cutting and trimming of batters and trimming of road sub-grades and pavements
Grader tasks may include:	• stripping/spreading topsoil and materials, cutting/boxing, cut and fill
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction • soil types and information • survey data, including: cut and fill levels, layer thicknesses, finished levels, finished grades and cross-falls
Safety requirements are to be:	• in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan

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Safety requirements may include:	• the site safety plan and organisational policies and procedures • protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • safe operating procedures which are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices which is to include but not be limited to ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • hazards and risks may include but not be limited to installed services, damaged or defective pressurise hoses and fastenings, abandoned equipment, adverse weather conditions (electrical storms, floods, fires), chemicals, contaminants, ancillary equipment, fences, holes and pot holes, over-hanging rocks, personnel, unsafe ground, unstable faces, vehicles, powerlines, dust and noise, conveyors, overhead services and stored energy which may include: engine components, radiators and cooling systems, hydraulic tanks and reservoirs, air tanks and reservoirs, hydraulic hoses, air hoses, tyres, air conditioning components, electrical components, braking systems, centrifugal forces • hazardous and emergency situations, which may include: motor vehicle accidents, lighting strikes (potential tyre explosion) and tyre fires (isolation procedures) • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and

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	evacuation
Tools and equipment are to include:	• hand tools and maintenance equipment relevant to the particular grader
Environmental requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management

pre-start, **start-up**, **park and shutdown procedures** may include:	• external check of the machine
	• inspection of attachments to ensure security and identify defects
	• checking of fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel)
	• carry out lubrication
	• checking of display instrumentation and gauges (indicators, gauges, laser levels), computer systems, including:
	  • brake air pressure
	  • brake oil temperature
	  • computer indicators
	  • engine oil pressure
	  • fuel filter
	  • parking brake
	  • retarder
	  • service meter
	  • speedometer/odometer
	  • steering filters
	  • tachometer
	  • torque converter
	  • oil temperature
	  • transmission filter
	  • voltmeter
	  • water temperature
	• inspection of air filter restriction indicator
	• inspection and checking of cab (horn, lights, air conditioner)
	• testing of engine and stop engine lights
	• testing visual and audio warning devices and lights
	• checking instruments and control lever
	• reporting of defects and damage

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	• secure equipment as required by site procedures • render attachments safe • clear access ways
Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials, organic materials, typical construction site materials/waste and bituminous mixes • rock types may include metamorphic, igneous and sedimentary
Attachments are to include:	• tynes/scarifiers
Attachments may include:	• dozer blade, machine guidance system, laser levelling equipment, ripper, slash
Operator **maintenance** is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults. It may also include the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO325A Conduct civil construction scraper operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting scraper operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating the machine; couple machines; relocating the machine; carrying out machine operator maintenance; and cleaning up.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction

Operator license issued by OHS authority may be required in some states or territories and scrapers must be registered to drive and operate on public roads.

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***scraper operations tasks*** 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identity, confirm and apply ***environmental*** protection requirements from the project environmental management plan, to the allotted task
2. Conduct machine pre operational checks	2.1. Carry our pre-start, start-up, park and shutdown procedures 2.2. Check scraper controls and functions, including implements or other attachments, brakes and manoeuvrability for serviceability and rectify or report any faults
3. Operate scraper	3.1. Identify site hazards associated with scraper operations and safe operating techniques are used to minimise risk 3.2. Identify and apply operating techniques for scrapers to achieve optimum output in accordance with design specifications 3.3. Operate scraper to work instructions 3.4. Carry our levelling, cutting, spreading, land filling/landscaping to job specifications and tolerances 3.5. Load and transport material to discharge point efficiently with minimum loss of load 3.6. Discharge material safely and efficiently
4. Couple machines	4.1. Establish and maintain coordination with

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	other scraper operator during coupling 4.2. Maintain coordination and cooperation with other machines and operators to ensure work is completed efficiently to job specifications 4.3. Provide assistance with safe disengagement of puller/pusher when bowls are filled to capacity 4.4. Use ***attachment*** in accordance with recommendations and design limits 4.5. Clean and store removed attachments in designated location
5. Relocate the scraper	5.1. Move scraper safely between worksites, observing relevant codes and traffic management requirements 5.2. Prepare scraper for relocation
6. Carry out machine operator maintenance	6.1. Safely park, shutdown and prepare scraper for ***maintenance*** 6.2. Conduct inspection and fault finding 6.3. Remove and replace defective parts safely and effectively 6.4. Carry out regular programmed maintenance tasks
7. Clean up	7.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 7.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct scraper operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply scraper operating techniques related to essential tasks
- apply processes for interpreting drawings and sketches
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- interpret materials safety data sheets and apply materials handling methods
- apply project quality requirements
- use civil construction terminology
- apply methods of changing machine attachments
- apply safe operating techniques in all terrain
- carry out basic earthworks calculations
- apply levelling techniques
- apply JSA's/Safe work method statement procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct scraper operations:

- scraper types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- site and equipment safety requirements
- scraper operating techniques related to essential tasks
- processes for interpreting drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- methods of changing machine attachments
- safe operating techniques in all terrain
- basic earthworks calculations
- civil construction activity sequences of road construction, earthworks and drainage

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- levelling techniques
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting scraper operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of scraper operations, including:
	  • a minimum of two different soil types, and
	  • are to include the mandatory tasks of stripping of materials to specified depth, the cutting and filling of materials to line and level, stockpiling and spreading
	  • where push pull scrapers are used, tasks are to include coupling, operating in tandem and disengagement
	• working with others to undertake and complete scraper operations that meet all of the required outcomes
	• consistent timely completion of scraper operations that safely, effectively and efficiently meet the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• a minimum of two different soil types, and
	• are to include the mandatory tasks of stripping of materials to specified depth, the cutting and filling of materials to line and level, stockpiling and spreading
	• where push pull scrapers are used, tasks are to include coupling, operating in tandem and disengagement
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the

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	candidate's: • working with others to undertake and complete scraper operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination
Scrapers may include:	• elevating scrapers, which are self-propelled articulating wheeled machine with a prime mover and sliding floor bowl configuration • the bowl houses an elevator system designed to assist in loading and unloading the bowl • the elevator system is normally hydraulically driven from the main engine; however, the elevator system may be driven by a separate power source • open bowl scrapers, which are self propelled articulating wheeled machine with a prime mover and sliding floor bowl configuration • these may be of a standard open bowl, tandem powered or push-pull configuration • the standard open bowl scraper normally requires the assistance of a push dozer when loading • standard open bowl and tandem powered scrapers may be fitted with an auger attachment in the bowl, to provide self-loading capability
Scraper tasks are to include:	• the stripping of materials to specified depth, the cutting and filling of materials to line and level, stockpiling and spreading • where push pull scrapers are used, tasks are to include coupling, operating in tandem and disengagement

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Scraper tasks may include:	• stripping/spreading topsoil, granular materials, cutting drains, cutting battens, cutting/boxing, backfilling and rough grading
Work instructions may including:	• plans, specifications, quality requirements and operational details • quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements are to be:	• in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan
Safety requirements may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • safe operating procedures which are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices which is to include but not be limited to ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation

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Tools and equipment are to include:	• hand tools and maintenance equipment relevant to the particular scraper
Environmental requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Communications practices are to include:	• verbal instructions and fault reporting and may include 2- way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task • on site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials and organic materials • rock types may include metamorphic, igneous and sedimentary
Attachments may include:	• an auger, machine guidance system and laser levelling equipment
Operator **maintenance** is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults. It may also include the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO326A Conduct civil construction water cart operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conduct water cart operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating the water cart; loading, transporting and distributing water; carrying out driver maintenance; and cleaning up.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction

Water carts must be registered to drive and operate on public roads.

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***water cart*** operations 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Obtain, identify and implement signage requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identity, confirm and apply ***environmental*** protection requirements from the project environmental management plan, to the allotted task
2. Conduct machine pre-operational checks	2.1. Carry out pre-start, start-up, park and shutdown procedures 2.2. Check water cart controls and functions, including implements or other attachments, brakes and manoeuvrability for serviceability and report or rectify any faults
3. Operate water cart	3.1. Identity site hazards associated with water cart operations and use safe operating techniques to minimise risk 3.2. Manage engine power to ensure efficiency of water cart platform movements and to minimise damage to the engine and gears 3.3. Coordinate engine power with gear selection to ensure smooth transition and operation within torque range 3.4. Operate water cart platform to work instructions 3.5. Constantly monitor ***road/traffic conditions*** and ensure no injury to people or damage to property, equipment, loads and facilities 3.6. Bring vehicle to a halt smoothly,

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	minimising the wear and tear on vehicle using the engine retarder, gears and brakes
4. Load, transport and distribute water	4.1. Position water cart at load and discharge/distribution points with a minimum of manoeuvre 4.2. ***Load*** water cart to within the authorised carrying capacity and to suit the site and task conditions 4.3. Move water cart from loading to the discharge/ distribution point safely and smoothly avoiding surge and sway 4.4. ***Discharge or distribute water*** in accordance with the task specifications 4.5. Monitor and maintain ***discharge and distribution systems*** throughout the operations
5. Carry out driver maintenance	5.1. Safely park, shutdown and prepare the water cart for ***maintenance*** 5.2. Conduct inspection and fault finding 5.3. Remove and replace defective parts safely and effectively 5.4. Carry out regular programmed maintenance tasks
6. Clean up	6.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 6.2. Clean, check, maintain and store vehicle, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct water cart operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply safe operating techniques in all terrain
- apply practical field tests for moisture content
- apply levelling techniques
- apply processes for interpreting engineering drawings and sketches
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- interpret materials safety data sheets and apply materials handling methods
- apply project quality requirements
- use civil construction terminology
- apply JSA's/Safe work method statement requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct water cart operations:

- water cart types, characteristics, technical capabilities and limitations
- pumps and pumping system operations
- water distribution systems types, characteristics, technical capabilities and limitations
- basic dust suppression theory
- the causes and effects of surge and sway in bulk fluid loads
- site and equipment safety requirements
- safe operating techniques in all terrain
- civil construction activity sequences of road construction, earthworks and drainage
- practical field tests for moisture content
- levelling techniques
- basic soil types and characteristics
- basic soil compaction theory including the effects of moisture content and mechanical interlock
- processes for interpreting engineering drawings and sketches
- operational, maintenance and basic diagnostic procedures

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- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting water cart operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of water cart operations, including:
	  • over not less than three shifts, and
	  • to include the mandatory tasks stated in the Range Statement and include:
	• the loading and transporting of water
	• pressure and gravity discharging of water evenly in civil construction compaction operations in a minimum of two different soil types to meet moisture content requirements
	• pressure and gravity distribution of water into two separate water storage facilities/receptacles
	• dust suppression operations
	• working with others to undertake and complete water cart operations that meet all of the required outcomes
	• consistent timely completion of water cart operations that safely, effectively and efficiently meet the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency

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	management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including: • the loading and transporting of water • pressure and gravity discharging of water evenly in civil construction compaction operations in a minimum of two different soil types to meet moisture content requirements • pressure and gravity distribution of water into two separate water storage facilities/receptacles

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	• dust suppression operations
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete water cart operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Water carts may be:	• purpose built vehicles or other vehicle/plant platforms being used for the purpose
Water cart functions are to include:	• loading, transporting, discharging and distribution of water
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements are to be:	• in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan
Safety requirements may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • safe operating procedures which are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other

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	machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices which is to include but not be limited to ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Tools and equipment are to include:	• hand tools and maintenance equipment relevant to the particular water cart
Environmental requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Road/traffic conditions include:	• road standards, traffic flow, distance and load
Water cart **loading** tasks are to include:	• loading from standpipes and/or purpose built pressure loading points and loading from water sources where water must be pumped from the source
Discharging water means:	• the movement of water from the water cart by either pressure pumping or gravity feed through pipes, lines and nozzles and/or spray bars
Discharging tasks are to include:	• the spraying of water in civil construction compaction operations by pressure means and by gravity means
Discharging tasks may include:	• dust suppression, stabilisation operations, fire fighting support and road maintenance
Distribution of water means:	• the movement of water from the water cart into another form of water storage area/receptacle

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Distribution tasks are to include:	• pressure and gravity discharge into another storage facility which may include the filling of water tanks, water points and/or fire points
Discharge and distribution systems includes:	• pumps, lines and nozzles
Communications practices are to include:	• verbal instructions and fault reporting and may include 2- way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task • on site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials, organic materials, typical construction site materials/waste and bituminous mixes • rock types may include metamorphic, igneous and sedimentary
Attachments may include:	• ripper/tyne, auger, tilt bucket, rock breaker, buckets, lifting device, vibrating compaction plate and compaction wheel
Operator **maintenance** is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults **It may also include** • the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMPO327A Conduct pipe layer operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting pipe-layer operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating the machine; attaching, securing, lifting, carrying and placing materials; transporting the machine; carrying out machine operator maintenance; and cleaning up.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***pipe-layer*** operations 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identity, confirm and apply ***environmental*** protection requirements from the project environmental management plan, to the allotted task
2. Conduct machine pre-operational checks	2.1. Carry our pre-start, start-up, park and shutdown procedures 2.2. Check pipe-layer controls and functions, including implements or other attachments, brakes and manoeuvrability for serviceability and rectify or report any faults
3. Operate pipe-layer	3.1. Identify site hazards associated with pipe-layer operations and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for pipe-layer to achieve optimum output in accordance with manufacturer's design specifications while achieving specified tolerances 3.3. Operate pipe-layer to work instructions in accordance with company operating procedures
4. Attach, secure, lift, carry and place materials	4.1. Conduct ***communication practices*** associated with transportation of material in accordance with legislation or worksite specific practices and procedures

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	4.2. Establish weight of load 4.3. Select, attach and use slings and lifting gear in accordance with safe working load requirements 4.4. Shift load safely and effectively in accordance with industry safety standards and manufacturers' specifications 4.5. Position machinery ensuring stability and locate to effectively shift materials according to job specifications 4.6. Move load in accordance with hand and audible signals
5. Transport pipe-layer	5.1. Move pipe-layer safely between worksites, observing relevant codes and traffic management requirements 5.2. Prepare pipe-layer for relocation
6. Carry out machine operator maintenance	6.1. Safely park, shutdown and prepare machine for ***maintenance*** 6.2. Conduct inspection and fault finding 6.3. Remove and replace defective parts safely and effectively 6.4. Carry out regular programmed maintenance tasks
7. Clean up	7.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 7.2. Load and unload pipe-layer to and from float or trailer

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct pipe-layer operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply techniques for calculating safe working loads
- apply pipe-layer and attachment operating techniques related to essential tasks
- apply processes for interpreting engineering drawings and sketches
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation requirements
- apply traffic management requirements
- interpret materials safety data sheets and apply materials handling methods
- apply project quality requirements
- use civil construction terminology
- apply methods of changing machine attachments
- apply safe operating techniques in all terrain
- carry out basic earthworks calculations
- apply JSA's/Safe work method statement requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct pipe-layer operations:

- pipe-layer types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- site and equipment safety requirements
- techniques for calculating safe working loads
- pipe-layer and attachment operating techniques related to essential tasks
- processes for interpreting engineering drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- methods of changing machine attachments

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- safe operating techniques in all terrain
- basic earthworks calculations
- civil construction activity sequences of road construction, earthworks and drainage
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conduct pipe-layer operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conduct pipe-layer operations, including:
	  • a minimum of nine pipe lengths, where the size of the pipes are to be greater than 50% of the authorised working load of the pipe-layer machine, and
	  • the ground conditions are to include level, sloping and broken surface
	• working with others to undertake and complete the conduct pipe-layer operations that meet all of the required outcomes
	• consistent timely completion of conduct pipe-layer operations that safely, effectively and efficiently meet the required outcomes
	• laser guidance or ATS are not to be used to assist in control of the machine during assessment

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• a minimum of nine pipe lengths, where the size of the pipes are to be greater than 50% of the authorised working load of the pipe-layer machine, and
	• the ground conditions are to include level, sloping and broken surface
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:

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	• working with others to undertake and complete pipe-layer operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **pipe-layer** is:	• a self-propelled crawler tractor with a purpose built side boom and winch assembly used for the express purpose of lifting and laying pipes, normally below ground level
Pipe-layer tasks include:	• the lifting, moving and placement of pipes
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements are to be:	• in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan
Safety requirements may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • safe operating procedures which are to include but not be limited to recognising and preventing hazards associated with

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	underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices which is to include but not be limited to ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Tools and equipment are to include:	• hand tools and maintenance equipment relevant to the particular pipe-layer and lifting equipment
Environmental requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Communications practices are to include:	• verbal instructions and fault reporting and may include 2-way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task • on site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials, organic materials, typical construction site materials/waste and bituminous mixes • rock types may include metamorphic, igneous and sedimentary
Materials are to include:	• pipes and may
Materials may include:	• trench shields

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Operator **maintenance** is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults. It may also include the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO328A Conduct continuous bucket trencher operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting continuous bucket trencher operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating the machine; selecting, removing and fitting attachments; relocating the machine; carrying out machine operator maintenance; and cleaning up.

Application of the Unit

This unit is appropriate for those working in plant operational roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to conduct ***continuous bucket trencher*** operations 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identity, confirm and apply ***environmental*** protection requirements from the project environmental management plan, to the allotted task
2. Conduct machine pre-operational checks	2.1. Carry out pre-start, start-up, park and shutdown procedures 2.2. Check continuous bucket trencher controls and functions, including implements or other attachments, brakes and manoeuvrability for serviceability and report or rectify any faults
3. Operate continuous bucket trencher	3.1. Identity site hazards associated with continuous bucket trencher operations and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for continuous bucket trencher to achieve optimum output in accordance with design specifications while achieving specified tolerances 3.3. Operate excavator to work instructions 3.4. Conduct trenching to specification and without damage to existing underground services 3.5. Excavate, construct and clean trenches/drains to widths and depths in

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	accordance with job specifications and regulatory requirements
4. Select, remove and fit attachments	4.1. Select ***attachment*** for the task 4.2. Remove and fit attachment 4.3. Test attachment to ensure correct fitting and operation 4.4. Use attachment in accordance with recommendations and design limits 4.5. Clean and store removed attachments in designated location
5. Relocate continuous bucket trencher	5.1. Move safely continuous bucket trencher between worksites, observing relevant codes and traffic management requirements 5.2. Prepare for relocation continuous bucket trencher
6. Carry out machine operator maintenance	6.1. Safely park, shutdown and prepare machine for ***maintenance*** 6.2. Conduct inspection and fault finding 6.3. Remove and replace defective parts safely and effectively 6.4. Carry out regular programmed maintenance tasks
7. Clean up	7.1. Clean work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 7.2. Clean, check, maintain and store plant, tools and equipment in accordance with manufacturer's recommendations and standard work practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to Conduct continuous bucket trencher operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply continuous bucket trencher operating techniques related to essential tasks
- apply processes for interpreting engineering drawings and sketches
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- interpret materials safety data sheets and apply materials handling methods
- apply project quality requirements
- use civil construction terminology
- apply methods of changing machine attachments
- apply safe operating techniques in all terrain
- carry out basic earthworks calculations
- apply JSA's/Safe work method statement requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to Conduct continuous bucket trencher operations:

- continuous bucket trencher types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- site and equipment safety requirements
- continuous bucket trencher operating techniques related to essential tasks
- processes for interpreting engineering drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- methods of changing machine attachments
- safe operating techniques in all terrain
- basic earthworks calculations

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- civil construction activity sequences of road construction, earthworks and drainage
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for conducting continuous bucket trencher operations
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of continuous bucket trencher operations, including:
	  • operate a trenching machine in straight line for 200m to line, level and specified depth
	  • trenches/drains cleared to width and depth as per plan
	• working with others to undertake and complete continuous bucket trencher operations that meet all of the required outcomes
	• consistent timely completion of continuous bucket trencher operations that safely, effectively and efficiently meet the required outcomes
	• laser guidance or ATS are not to be used to assist in control of the machine during assessment

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• operate a trenching machine in straight line for 200m to line, level and specified depth
	• trenches/drains cleared to width and depth as per plan
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the continuous bucket trencher operations

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Continuous bucket trenchers are:	• self-propelled purpose designed crawler tractor machine with a continuous bucket assembly mounted on the front of the machine
Continuous bucket trencher tasks are to include:	• trenching and draining
Continuous bucket trencher tasks may include:	• pipe laying
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements are to be:	• in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan
Safety requirements may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices

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	• safe operating procedures which are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices which is to include but not be limited to ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Tools and equipment are to include:	• hand tools and maintenance equipment relevant to the particular machine
Environmental requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Attachments are to include:	• buckets
Attachments may include:	• rock saws
Operator **maintenance** is to include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults. It may also include the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities
Materials may include:	• clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials, organic materials, typical construction site materials/waste and bituminous mixes • rock types may include metamorphic, igneous and sedimentary

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Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO329A Conduct dragline operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of dragline operations in resources and infrastructure industries. It includes: planning and preparing for operations; relocating burden and materials; relocating the dragline; and carrying out operator maintenance.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction
- Coal mining
- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting of ***dragline*** operations 1.2. Obtain, interpret and clarify/confirm ***work requirements*** in the form of shift briefings, handover details or work orders before proceeding 1.3. Access, interpret and apply geological and survey data required to complete allocated work 1.4. Access and apply ***safety information and procedures*** throughout work
2. Relocate burden and materials	2.1. Resolve coordination activities with others at the site prior to commencement of, and during the work activity 2.2. Conduct pre-start, start-up, park-up and shutdown procedures 2.3. Operate controls to position, fill and dump burden or other material as part of the ***dig sequence*** and ***specified tasks*** 2.4. Act on or report ***monitoring systems*** and alarms 2.5. Recognise and respond to ***hazardous and emergency situations*** 2.6. Complete work in accordance with agreed plan and outcomes and within the operating capacities of the allocated equipment
3. Relocate dragline	3.1. Receive and confirm route and location plan and if necessary check by site inspection 3.2. Complete ground preparation 3.3. Locate and handle cables 3.4. ***Coordinate*** use of support equipment and personnel 3.5. Walk dragline
4. Carry out operator maintenance	4.1. Conduct inspections and fault-finding 4.2. Conduct authorised routine operational servicing, lubrication and housekeeping tasks 4.3. Conduct authorised minor maintenance

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	4.4. Provide authorised operator support during preparation for, and conduct of, major maintenance tasks 4.5. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct dragline operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply hand-eye coordination
- work wearing noise protection equipment
- apply diagnostic techniques
- use relevant hand tools
- apply equipment records maintenance requirements
- apply procedures required for disposal of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct dragline operations:

- site and equipment safety procedures
- site mining systems and procedures
- dragline and associated equipment characteristics, technical capabilities and limitations
- dragline maintenance systems and procedures
- site geological and survey data
- hazard identification and response procedures
- site environmental requirements and constraints related to dragline operations
- working at heights
- working in confined spaces

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting dragline operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of dragline operations • working with others to undertake and complete dragline operations that meet all of the required outcomes • consistent timely completion of dragline operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the dragline operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Draglines include:	• a broad range of equipment capacities and they may be electric drive, hydraulic or diesel powered
Work requirements may include:	• information on operations and mining conditions • site lighting conditions • dig sequence • defects on equipment • hazards • output targets • coordination requirements/issues
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice • manufacturer's instructions • safe working procedures (or equivalent)
Specific **safety** requirements are to include:	• boarding and disembarking procedures • limit testing requirements • operational signal procedures
Dig sequence may include:	• set up requirements • manoeuvre • operational information • soil placement

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	• movement to main • dump to final spoil
Specified tasks may include:	• key cut • main dig • chop • placement of primary spoil • rehandling of spoil placement • bridge building • other site-specific activities
Monitoring systems and alarms are:	• those which indicate vital signs and out of specification activities/operations
Hazardous and emergency situations may include:	• sinking • bridge failure • spoil stabilisation • wet weather operation • electrical shutdown or site equivalent
Coordination requirements may include those with:	• dozers • cable reelers • graders • bobcats • winches • cranes • tractors • other vehicles

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO330A Conduct bucket-wheel operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting bucket-wheel operations in the coal mining industry. It includes: planning and preparing for operations; operating and relocating the bucket-wheel excavator; and carrying out operator maintenance.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at open-cut operations within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting ***bucket-wheel operations*** 1.2. Obtain, interpret and clarify/confirm ***work requirements*** and ***shift details*** before proceeding 1.3. Access, interpret and apply ***geological and survey data*** required to complete the allocated work 1.4. Access and apply ***safety information and procedures*** throughout the work
2. Operate bucket-wheel excavator	2.1. Coordinate activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up and shutdown procedures 2.3. Operate bucket-wheel controls to remove and place burden 2.4. Act on monitoring systems and alarms or report problems 2.5. Recognise and respond to ***hazardous and emergency situations*** 2.6. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment 2.7. Steer, travel and maintain alignment to optimise digging capacity according to mine plan 2.8. Optimise digging performance 2.9. Maintain design bed and batter slopes according to mine plan
3. Relocate bucket-wheel excavator	3.1. Receive and confirm route and location plan if necessary by site inspection 3.2. Complete ***ground preparation*** 3.3. Carry out cable location and handling 3.4. Resolve ***coordination issues***, including support equipment and personnel 3.5. Conduct steering and travel to relocate bucket wheel excavator

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4. Carry out operator maintenance	4.1. Carry out bucket-wheel inspections and fault-finding 4.2. Carry out authorised routine operational servicing, lubrication and housekeeping tasks 4.3. Carry out authorised minor maintenance 4.4. Provide authorised operator support during preparation for, and conduct of, major maintenance tasks 4.5. Inspect and test structures and components for fault conditions, wear and need of repair or replacement 4.6. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct bucket-wheel operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply hand-eye coordination
- apply procedures for working at heights
- apply diagnostic techniques
- use relevant hand tools
- apply environmental constraints
- apply equipment records maintenance requirements
- apply required procedures for the dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct bucket-wheel operations:

- site and equipment safety procedures
- site operational procedures
- equipment characteristics, technical capabilities and limitations
- operational procedures
- site environmental requirements and constraints
- hazard identification and response procedures
- maintenance systems and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting bucket-wheel operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of bucket-wheel operations • working with others to undertake and complete bucket-wheel operations that meet all of the required outcomes • consistent timely completion of bucket-wheel operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete bucket-wheel operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Bucket-wheel operations may include:	• the positioning and digging of burden as part of a terrace dig • rehandling and responding to changes in depth, grade and crossfall
Work requirements may be in the form of:	• shift briefings; • handover details • work orders
Shift details may include:	• nature and scope of the work • working conditions • achievement targets • site lighting arrangements • defects on equipment • hazards and potential hazards • coordination requirements/issues
Geological and survey data may include:	• safety factors relating to natural fall • grades • levels • faults • slips • strata • drainage
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • OHS policy

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	• code of practice
	• manufacturer's instructions
	• safe working procedures (or equivalent)
	• specific safety requirements , including:
	  • boarding and disembarking procedures
	  • identifying and confirming potential hazards
	  • relocating and operational signal procedures

Hazardous and emergency situations may include:	• sinking • spoil and highwall stabilisation • wet weather operation • electrical start-up and shutdown • belt system fires • electrical fires • windy and dusty conditions • working in close proximity to moving equipment and parts
Ground preparation for bucket-wheel relocation may include:	• pads • roads • rolls • cable route • ramps
Coordination issues may include:	• communication with personnel • awareness of other support plant • equipment

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO331A Conduct operations with stockpile dozer

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting stockpile dozer operations in the metalliferous mining and extractive industries. It includes: planning and preparing for operations; operating the dozer; performing stockpile operations; and carrying out operator maintenance.

Application of the Unit

This unit covers all tracked dozers; and those tasks and performance criteria which are within the legal and technical limitations of rubber-wheeled dozers. It is appropriate for those working in mobile plant operator roles, at worksites within:

- Metalliferous mining
- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***stockpile dozer operations*** 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Interpret and apply basic geological and survey data required to complete the allocated task 1.4. Access and apply ***safety information and procedures*** throughout the operations
2. Operate dozer	2.1. Coordinate operations with other involved personnel and equipment/plant 2.2. Carry out pre-start, start-up and shutdown procedures 2.3. Effectively use dozer controls and functions to complete specified tasks 2.4. Act on or report monitoring systems and alarms 2.5. Recognise and respond to hazardous and emergency situations
3. Perform stockpile operations	3.1. Place material in and remove from predetermined stockpile location to work specifications 3.2. Form slope and height to work specifications 3.3. Level stockpiles to tolerances 3.4. Monitor and respond to spontaneous combustion indicators 3.5. Monitor and respond to contamination indicators
4. Carry out post-operational procedures	4.1. Inspect, fault find and report faults 4.2. Carry out routine ***operator servicing***, ***maintenance and housekeeping tasks*** 4.3. Maintain and process ***records and reports***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct stockpile dozer operations:

- apply legislative, organisation and site requirements and procedures
- apply operation safety
- access, interpret and apply technical information
- apply hand-eye coordination
- apply diagnostic techniques

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct stockpile dozer operations:

- site and equipment safety requirements
- stockpile management procedures
- equipment characteristics, technical capabilities and limitations
- dozer operational procedures
- dozer maintenance systems and procedures
- site environmental requirements and constraints related to dozer operations
- basic geological and survey data

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting stockpile dozer operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of stockpile dozer operations • working with others to undertake and complete the stockpile dozer operations that meet all of the required outcomes • consistent, timely completion of stockpile dozer operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the stockpile dozer operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Stockpile dozer operations may include:	• ripping • pushing and levelling • pad preparation • drainage • dump establishment • maintenance
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirements may include:	• plant identification/allocation • nature and scope of the task • achievement targets • working conditions • adequacy of site lighting • defects to equipment • hazards and potential hazards • coordination requirements/issues
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice • manufacturer's instructions • safe working procedures (or equivalent)
Specific **safety** requirements may	• boarding and disembarkation procedures

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include:	• spontaneous combustion awareness • slippery conditions • uneven surfaces • operational signal procedures • equipment lowering and lifting
Operator service, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• cleaning • authorised servicing and the monitoring • recording and reporting faults • conducting authorised minor replacements • providing assistance to maintenance personnel during maintenance and repair activities
Records and reports may include:	• fuel usage • computer readings • end of shift documentation • supplies logs • work logs stockpile information • quality information

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO332A Conduct operations with skid steer loader

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting skid steer loader operations in resources and infrastructure industries. It includes: planning and preparing; conducting machine pre-operational checks; operating skid steer loaders; loading, carrying and placing materials; selecting, removing and fitting attachments; relocating the skid steer loader; carrying out machine operator maintenance; and cleaning up.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***skid steer loader tasks*** 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Access, interpret and apply ***traffic management*** procedures 1.5. Select ***plant***, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Access, interpret and apply ***environmental protection procedures***
2. Conduct machine pre-operational checks	2.1. Carry out pre-start, start-up, park and shutdown procedures 2.2. Check ***loader controls and functions*** for serviceability, and rectify or report any faults
3. Operate skid steer loader	3.1. Identify site hazards associated with skid steer loader operations and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for skid steer loader to achieve optimum output in accordance with manufacturer's design specifications 3.3. Operate loader to work instructions
4. Load, carry and place materials	4.1. Conduct ***communication practices*** associated with transportation and loading of ***materials*** in accordance with site specific practices and procedures, and confirm between parties 4.2. Ensure load or lift is within safe operational limits of the machine 4.3. Position machinery to ensure stability and effectively shift materials according to job specifications 4.4. Shift load safely and effectively

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	4.5. Move load in accordance with ***communication practices***
5. Select, remove and fit attachments	5.1. Select ***attachment*** for the task 5.2. Remove and fit attachment 5.3. Test attachment to ensure correct fitting and operation as specified 5.4. Use attachment in accordance with recommendations and design limits 5.5. Clean and store removed attachments in designated location
6. Relocate the skid steer loader	6.1. Prepare skid steer loader for relocation 6.2. Move skid steer loader safely between worksites, observing relevant codes and traffic management requirements
7. Carry out machine operator maintenance	7.1. Safely park, shutdown and prepare machine for ***maintenance*** 7.2. Conduct inspection and fault finding 7.3. Carry out regular programmed ***maintenance*** tasks in accordance with site procedures
8. Clean up	8.1. Clear work area and dispose of or recycle materials in accordance with environmental management procedures 8.2. Clean, check, maintain and store plant tools and equipment in accordance with site procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct skid steer loader operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- perform safe working load calculations
- apply skid steer loader operating techniques
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- apply site quality requirements
- change machine attachments
- apply safe operating techniques in all terrain
- apply levelling techniques

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct skid steer loader operations:

- skid steer loader types, characteristics, technical capabilities and limitations
- site and equipment safety requirements
- techniques for calculating safe working loads
- skid steer loader techniques related to essential tasks
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- methods of changing machine attachments
- safe operating techniques in all terrain
- levelling techniques
- risk assessment tools/safe work methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting skid steer loader operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of skid steer loader operations • working with others to undertake and complete skid steer loader operations that meet all of the required outcomes • consistent timely completion of skid steer loader operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity • Aboriginal people and other people from a non English speaking background may have second

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	language issues • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances • Where applicable, physical resources should include equipment modified for people with disabilities • Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to conduct skid steer loader operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant **compliance documentation** may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **skid steer loader** is:	a self-propelled wheeled machine in which: • steering is accomplished by skidding or reversing the wheels or tracks on one side of the machine • there is an integral front-mounted bucket-supporting structure and linkage, which loads or excavates through forward motion of the machine, and lifts, transports and discharges material
Skid steer loader tasks may include:	• stripping/spreading topsoil and materials • backfilling • loading vehicles • excavations • mixing materials • site clean up • compacting • truck excavation • lifting and carrying materials • cutting batters and benches • rock breaking and any activities associated with attachments listed
Work instructions may include:	• plans • specifications • operational details • verbal instructions from a supervisor • quality requirements, which may include but

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	not be limited to: • dimensions • tolerances • standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements are to be:	• in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and site safety management plans
Safety requirements may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment, including that prescribed under legislation, regulation and workplace policies and practices • safe operating procedures, which may include recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices which may include ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites and a safe distance from excavations, and securing the loader from unauthorised access or movement • hazards and risks may include uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, vehicle interactions, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit may include emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Traffic management procedures may include:	• signage • barricades

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	• radio and communication procedures
Plant, **tools and equipment** may include:	• hand tools and maintenance equipment relevant to the particular skid steer loader • type of plant suited to task
Environmental protection procedures may include:	• organisational/project environmental management plan • waste management procedures • water quality protection procedures • noise management procedures • vibration management procedures • dust management procedures • clean-up management
Loader controls and functions may include:	• implements • attachments • brakes • manoeuvrability
Communications practices may include:	• verbal instructions and fault reporting • two-way radio • hand signals • mobile phone • site specific instructions, written instructions or instructions related to job/task • on site meeting processes, which may include notification/scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
Materials may include:	• coal, clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials, organic materials, typical construction site materials/waste and bituminous mixes • rock types may include metamorphic, igneous and sedimentary • construction materials may include pegs, wire, cordage, safety equipment and other support equipments
Attachments may include:	• multipurpose bucket • forks • dozer blade • backhoe • auger • chain digger • power broom

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	• profiler • tiller/mixer • rotary hoe • hammer • asphalt cutter/saw • concrete cutter/saw • rake
Operator maintenance may include:	• cleaning • authorised servicing • monitoring, recording and reporting faults • authorised minor replacements • the provision of assistance to maintenance personnel during maintenance and repair activities according to site procedures

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO333 Conduct underground load, haul and dump truck operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting of load, haul and dump operations in underground metalliferous mines. It includes: planning and preparing for operations; operating load, haul, dump equipment; loading, hauling and dumping materials; cleaning up the job site; and carrying out operator maintenance and housekeeping.

Application of the Unit

Load, haul, dump equipment may include: bogger, load haul dump equipment (LHD), scoop tram, mucking units. This unit is appropriate for those working in a mobile plant operator roles, at underground mines within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting of load, haul and dump operations in underground metalliferous mines 1.2. Receive, interpret and clarify shift changeover details 1.3. Select personal protective equipment appropriate for work activities 1.4. Select appropriate type of auxiliary equipment for work activities 1.5. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.6. Identify, address and report ***potential hazards and risks*** 1.7. Carry ***out start-up procedures*** 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to ***emergency procedures*** to ensure safety of personnel, equipment and site 1.10. Inspect and assess site conditions to determine if scaling is required and take action according to site requirements 1.11. Use approved ***dust suppression and extraction methods*** 1.12. Ensure area is well ventilated before entry into work area 1.13. Erect safety provisions where appropriate
2. Operate load, haul, dump	2.1. Communicate with other personnel using ***equipment*** approved communication methods 2.2. ***Operate equipment safely*** within working environment, limitations and road conditions 2.3. Monitor and manage equipment performance using appropriate ***indicators*** 2.4. Pass on end of shift information to oncoming shift
3. Load material	3.1. Wash down surrounding area and wet ***material*** to suppress dust

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	3.2. Scale down loose material 3.3. Check job site and identify and manages possible misfires in accordance with site procedures 3.4. Check, identify and remove ***contaminants*** 3.5. Ensure all hoses and other auxiliary services are neatly stored 3.6. ***Bog*** to work plan removing required materials 3.7. Ensure road is kept clear during bogging
4. Haul material	4.1. Confirm type of material and haul to designated location 4.2. Lower bucket in recommended position 4.3. Identify and manage spillages on hauling surface 4.4. Maintain hauling efficiency by managing working environment conditions
5. Dump materials	5.1. Slow equipment to crawl when approaching dump site lift bucket to appropriate height in readiness for dumping, maintaining stability of loader 5.2. Dump material evenly distributing load or as required
6. Clean up job site	6.1. Scale down site ensuring loose materials are dislodged safely 6.2. Leave site and surrounding area clear, safe and accessible
7. Carry out operator maintenance	7.1. Carry out ***shutdown procedures*** 7.2. ***Service*** and make minor adjustments to equipment
8. Carry out housekeeping activities	8.1. ***Clean equipment*** to maintain condition of equipment and ensure safe and efficient operations 8.2. Clean and store auxiliary service equipment 8.3. Manage and/or report hazards to maintain a safe working environment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct load, haul, dump operations in underground metalliferous mines:

- apply legislative, organisation and site requirements and procedures
- apply auxiliary equipment operating, maintenance and cleaning procedures
- apply hazard identification procedures
- apply vehicle directing procedures
- apply driving techniques
- interpret ground conditions
- apply operations monitoring procedures
- apply pushing techniques
- apply vehicle refuelling procedures
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct load, haul, dump operations in underground metalliferous mines:

- dumping procedures
- vertical opening procedures
- backfilling procedures
- emergency procedures
- environmental procedures
- inspection procedures
- explosive/misfire awareness
- site isolation procedures
- equipment parking
- equipment processes, technical capability and limitations
- hauling procedures
- levelling
- manufacturer's specifications
- material placement procedures
- operational procedures and checks
- primary and secondary ventilation
- road rules

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• start-up and shut down procedures • towing procedures • underground procedure

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting of load, haul, dump operations in underground metalliferous mines • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of load, haul, dump operations in underground metalliferous mines • working with others to undertake and complete load, haul, dump operations in underground metalliferous mines that meet all of the required outcomes • consistent timely completion of load, haul, dump operations in underground metalliferous mines that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete load, haul, dump operations in underground metalliferous mines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Pre-start checks may include:	• air filter restriction indicator • cab condition (e.g. no rags in air conditioner vent, dirt around brake and accelerator pedals, seat and seat belt condition, all gear secured) • cab mounts • capacity of equipment may include: load, fuel, ventilation requirements • combustible material around exhaust • computer systems • correct location of equipment • damage to equipment, portable fire extinguisher (e.g. bracket, gauge, hose, ease of access) • danger tags • display instrumentation and gauges (e.g. indicators, gauges, laser levels) • duration of operation • efficient and safe operating speed • engine and stop engine lights (orange and red) • fire suppression unit (e.g. pins in position in triggers) • fluid leaks (e.g. oil/fuel/water - engine, hydraulic hoses, on ground, transmission) • fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel, transmission) • grease lines

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	• light positioning and cleanliness • operating limitations • personal proximity • radio communications • safety mechanisms operational (e.g. horn, operating lights)
Potential hazards and risks may include:	• adjoining pit walls • brake failure • break and steering failure • bund and/or wall collapse • communication failure • decline traffic • fatigue • fire • fire on equipment • hydraulic line failure • mount dismount injuries • overhead and adjacent services (power, water, compressed air) • pot holes • road conditions • rocks • spillage • unauthorised personnel • unsafe ground • visibility • tipping hazards • poor ventilation • fumes and gases • unauthorised personnel • unprotected and/or loose edges • chute operations hazards • working near vertical openings
Start-up and shutdown procedures may include:	• type of activities performed • tyres and rim condition • vehicle is left secured • vehicle number • visual and audio warning devices and lights • weight and/or load limitations • wheel nuts and studs • windows (e.g. clean, emergency exit tag in place)

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Environmental issues may include:	• diesel emissions • dust • noise • spills • water
Emergency procedures may include:	• clean up • equipment shutdown procedures • evacuation procedures • First Aid • notification of authorities • safety equipment • use of personal protective equipment
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (e.g. vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Safe equipment operation may include:	• speed limits • mine lighting • site vehicle identification lights • right of way • parking in stockpiles • parking on incline/decline • refuelling procedures • rules at intersections • driving regulations, rules and conventions • towing methods • chute operations • filling
Indicators may include:	• air filter restriction indicator • brake air pressure • brake oil temperature • brake oil pressure • computer indicators • engine oil pressure • fire suppression system • fuel filter • loading brake • parking brake • retarder • service meter

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	• speedometer/odometer • steering filters • tachometer • torque converter oil temperature • transmission filter • voltmeter/ ammeter • water temperature
Materials may include:	• gravel • overburden • oxidised waste • rejects • road base • rubbish • sand • sulphide rock fill • tailings
Contaminants may include:	• cigarette butts • consumables • ear plugs • explosives • metal bucket teeth • metal or steel rods • old piping • old workings • plastic • timber • wet fill
Bogging may:	• be referred to as mucking (loading the bucket of the machine)
Servicing may include:	• checking/topping up fluid levels • clean glass (lights, windows etc) • filter changing • head/dash light changing • degreasing/greasing • keeping cab clean • replacing ground engaging tools (bucket teeth) • tightening loose fittings
Equipment cleaning methods may include:	• degreasing • rags and cloths • forced air • steam cleaning

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	• water
Site conditions may include:	• amount of scale • backs • broken ground • dry • face • location of water table • noise • slope of working surface • stability of ground • stable ground (compaction) • ventilation characteristics (fumes, dust) • visibility • walls • wet

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO401A Supervise mobile plant operations

Modification History

Not applicable.

Unit Descriptor

This unit covers supervising mobile plant operations in resources and infrastructure industries. It includes: planning, preparing for and initiating, monitoring, adjusting and reporting on execution of the operations.

Application of the Unit

This unit is appropriate for those working in a supervisory or technical specialist role, within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, prepare for and initiate the operations	1.1. Access, interpret, apply and share with team members ***compliance documentation*** relevant to ***mobile plant operations*** 1.2. Access and share with team members the ***geological and survey data*** required to complete the mobile plant operations 1.3. Prepare an action plan, in consultation with team members, which makes best use of the available resource and meets the site operational requirements 1.4. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of mobile plant operations 1.5. Issue clear and timely ***instructions*** to team members and others involved for the safe, effective and efficient conduct in the mobile plant operations to meet site operational requirements
2. Monitor, adjust and report on execution of the operations	2.1. Ensure safe, effective and efficient execution of plant operational tasks 2.2. Monitor operations performance to ensure achievement of planned outcomes 2.3. Initiate adjustments to work programs to take into account non-achievement of planned outcomes 2.4. Complete and submit reports 2.5. Recommend changes to improve the safety, efficiency and effectiveness of the mobile plant operations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise mobile plant operations:

- apply legislative, organisation and site requirements and procedures
- provide team leadership
- apply procedures to choose appropriate operational techniques
- apply procedures to choose and assign appropriate plant and equipment
- apply procedures to develop and administer work plans

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise mobile plant operations:

- risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- site operational requirements
- team leadership techniques
- operational techniques required for execution of the mobile plant tasks
- plant and equipment capabilities
- work planning techniques
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervising mobile plant operations • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of mobile plant operations • working with others to plan, prepare and conduct mobile plant operations • provision of clear and timely instruction and supervision by the individual of those involved in mobile plant operations • evidence of the consistent successful supervision of mobile plant operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct mobile plant operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the mobile plant operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include relevant site-specific information in relation to:	• rock and soil type and characteristics • faults and joints • water tables or other water sources
Survey data may include relevant site-specific information in relation to:	• floor heights • bench widths • grades
Mobile plant operations may cover:	• land clearing • overburden stripping and stockpiling • face loading • raw feed haul and dumping • sales loading • raw feed and product stockpiling • road, pavement, drainage and dam construction and maintenance • rehabilitation and environmental works • raw feed and product blending • tailings deposition and treatment
Resources may include:	• labour • materials • services • equipment
Instructions may be issued in briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • refuelling arrangements • operational conditions

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	• obtaining permits required • site layout • out of bounds areas • worksite inspection requirements, • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO402A Apply the principles of earthworks construction

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of earthworks construction tasks in the Civil Construction industry. It includes the requirements for
ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of earthworks construction are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***earthworks construction*** tasks 1.2. Access, interpret and clarify the ***specific task information and requirements*** relevant to undertaking earthworks construction task 1.3. Ensure a ***job plan*** is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate initiation of tasks is carried out	2.1. Confirm that the necessary ***resources*** are available for the safe, effective and efficient conduct of tasks 2.2. Ensure clear and timely ***instructions*** are communicated to ***team members*** and others involved, for the safe, effective and efficient conduct of tasks, to meet the specific task requirements 2.3. Ensure the task ***set out*** is carried for the effective completion of the task
3. Oversee the execution of tasks	3.1. ***Monitor*** earthworks construction task performance to ensure it achieves the ***required outcomes*** 3.2. ***Initiate*** adjustments to ***earthworks construction practice*** or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply the principles for the earthworks construction:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures, including required supply rates
- interpreting earthworks construction materials properties and test results, including:

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- soil density/moisture relationship
- plasticity index
- particle size distribution
- provide recommendations for the improvement of the safe, effective and efficient execution of earthworks construction tasks

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply the principles for the earthworks construction:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- OHS requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques
- resource requirements and procedures
- activities scheduling requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles
- civil works construction sequencing
- earthworks and related activities' terminology
- set out requirements and procedures
- road geometry
- ground surface treatment requirements and procedures e.g. proof rolling
- drainage requirements
- works planning techniques

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- monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application of the principles for the earthworks construction • implementation of appropriate procedures and techniques for the safe, effective and efficient execution of earthworks construction tasks • working with others to plan, prepare and execute earthworks construction tasks • provision of clear and timely instruction and supervision by the individual of those involved in the execution of earthworks construction tasks • evidence of the consistent successful completion of earthworks construction tasks
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and execute earthworks construction
	  • provision of clear and timely instruction and supervision by the individual of those involved in the execution of earthworks construction

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Earthworks construction may include:	• land clearing • bulk earthwork • surface drainage works • water storage dam construction • tailings dam construction • rehabilitation works • road works preparation, including the sub-grade

Specific task information and requirements may include:	• site geological and geotechnical data, including:
	  • rock types and characteristics
	  • soil types and characteristics
	• site hydrological data, including:
	  • surface water
	  • ground water
	• site meteorological data, including:
	  • rainfall
	  • humidity
	  • temperature
	  • wind
	• site engineering survey data
	• known and potential site hazards, constraints and conditions
	• site cultural and heritage information
	• task specifications

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	• task drawings • sources of materials • other organisations and contractors involved in the task or related tasks • coordination, timing and budgeting requirements
Job plan is to include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • OHS requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	• labour • plant, equipment and tools • material supply vehicles • construction materials • sub-contractor services
Instructions are to include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks

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Set out is to include:	• control lines • cleared width • batters • off-sets
Monitor is to include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Initiate is to include:	• written communication • oral communication
Earthworks construction practice may include:	• site preparation methods • extraction methods • load and haulage methods • placement methods • distribution methods • surface finishing methods • line, grade and level control methods • compaction methods • water application methods • sedimentation control methods

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMPO403A Monitor interaction of heavy and light vehicles and mining equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers monitoring the interaction of heavy and light vehicles and mining equipment in the coal and metalliferous mining and extractive industries. It includes: planning and preparing; monitoring vehicles and equipment; and monitoring and reviewing operations.

Application of the Unit

This unit is appropriate for those working in a supervisory or technical specialist role, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for monitoring	1.1. Access, interpret and apply ***compliance documentation*** relevant to interaction of ***vehicles*** and mining ***equipment*** 1.2. Identify and record site requirements for the interaction of transport systems and equipment 1.3. Access and interpret the specifications for the required transport systems and equipment 1.4. Identify, clarify and communicate roles and responsibilities 1.5. Access and interpret standard operating procedures
2. Monitor vehicles and equipment	2.1. Monitor effectiveness of ***policies***, ***plans***, ***procedures*** and workplace practices against objectives, timelines, key performance indicators and regulations 2.2. Validate use of vehicles and equipment and record in accordance with the project specifications 2.3. Identify ***hazards*** associated with interaction of transport and *equipment* and evaluate and respond to ***risks*** in accordance with established procedures 2.4. Monitor interaction of vehicles and mining equipment to ensure optimum efficiency 2.5. Monitor hazards associated with interaction of vehicles and mining equipment in accordance with workplace procedures
3. Monitor and review operations	3.1. Monitor the impact of ***contingencies*** 3.2. Use available information from monitoring processes to ensure accurate problem identification 3.3. Obtain specialist advice/assistance where required 3.4. Manage the impact of contingencies 3.5. Implement rectification requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to monitor the interaction of heavy and light vehicles and mining equipment:

- apply legislative, organisation and site requirements and procedures
- apply techniques to develop responsibility/motivation
- manage policy
- apply interpersonal skills
- liaise with other parties
- coordinate others
- manage information
- solve problems
- analyse operational problems
- use measuring equipment
- write clear reports
- facilitate meetings

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to monitor the interaction of heavy and light vehicles and mining equipment:

- accuracy and precision requirements
- limitations of transport, mobile plant and equipment systems
- functions of vehicles and mine equipment
- capabilities and limitations of equipment and vehicles
- project reporting guidelines
- risk management principles
- company organisation
- work role definitions
- reporting methods and alternatives
- relevant regulations, licenses and permits
- emergency procedures and obligations
- community expectations
- consultative strategies
- alternative documentation systems for procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for monitoring the interaction of heavy and light vehicles and mining equipment • implementation of appropriate procedures and techniques for the safe, effective and efficient monitoring of the interaction of heavy and light vehicles and mining equipment • working with others to plan, prepare, conduct and monitor the interaction of heavy and light vehicles and mining equipment • provision of clear and timely instruction and supervision by the individual of those involved in the interaction of heavy and light vehicles and mining equipment • evidence of the consistent successful monitoring of the interaction of heavy and light vehicles and mining equipment
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare, conduct and monitor the interaction of heavy and light vehicles and mining equipment
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the interaction of heavy and light vehicles and mining equipment

Guidance information for	Consult the SkillsDMC User Guide for further

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assessment	information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Vehicles may include:	• all machines involved in production or those that have access to the operational and trafficable areas at the mine site

Equipment may include:	• mobile plant heavy earth moving equipment
	• water and service machines
	• 4 wheel drive passenger vehicles , including:
	  • cars
	  • buses
	  • equipment systems, e.g. trailers and floats

Policies, **plans and procedures** may include:	• organisational commitment • community consultation and involvement • objectives and targets • surveying program • documentation and records • operational and emergency procedures • responsibility and reporting structure • work environmental impact, regulatory and legal compliance • reviews/audits • significant incident alerts
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood

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Contingencies may include:	• vehicle and equipment failure • observation errors • operator error • movement of plant or ground • weather • obstructions • changing environment • visibility • parking • overhead power

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO501A Implement, monitor, rectify and report on mobile plant and equipment systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementing, monitoring, rectifying and reporting on mobile plant and equipment systems in resources and infrastructure industries.

Application of the Unit

This unit is appropriate for those working in a management or technical specialist role, within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Implement systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***mobile plant and equipment systems*** 1.2. Document responsibilities of personnel 1.3. Document reporting structures 1.4. Document regulations and site requirements that impact upon work operations 1.5. Document operational and emergency procedures 1.6. Identify and contact ***stakeholders*** 1.7. Implement mobile plant and equipment systems
2. Monitor systems	2.1. Monitor effectiveness of ***policies***, ***plans***, ***procedures*** and workplace practices against objectives, timelines, key performance indicators and regulations 2.2. Validate and record use of mobile plant and equipment systems in accordance with the project specifications 2.3. Assess operating ***constraints*** 2.4. Monitor the impact of ***contingencies*** 2.5. Monitor effective use of resources
3. Rectify systems	3.1. Use available information from monitoring processes to ensure accurate problem identification 3.2. Obtain specialist advice/assistance where required 3.3. Manage the impact of contingencies 3.4. Implement rectification requirements
4. Report on systems	4.1. Document results in accordance with project specifications 4.2. Inform relevant parties of the results

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement, monitor, rectify and report on mobile plant and equipment systems:

- apply legislative, organisation and site requirements and procedures
- apply techniques to develop responsibility / motivation
- apply policy management skills
- demonstrate interpersonal skills
- liaise with other parties
- coordinate others
- apply information management systems
- apply problem solving techniques
- apply analysis techniques
- use measuring equipment
- apply clear report writing techniques
- facilitate meetings

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement, monitor, rectify and report on mobile plant and equipment systems:

- accuracy and precision requirements
- limitations of mobile plant and equipment systems
- project reporting guidelines
- risk management principles
- company organisation
- work role definitions
- reporting methods and alternatives
- relevant regulations, licenses and permits
- emergency procedures and obligations
- community expectations
- consultative strategies
- alternative documentation systems for procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementing, monitoring, rectifying and reporting on mobile plant and equipment systems • implementation of procedures and techniques for the safe, effective and efficient implementing, monitoring, rectifying and reporting on mobile plant and equipment systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete mobile plant and equipment systems • consistent successful implementing, monitoring, rectifying and reporting on mobile plant and equipment systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementing, monitoring, rectifying and reporting on mobile plant and equipment systems
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary

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	evidence of the candidate's: • working with others to undertake and complete the implementing, monitoring, rectifying and reporting on mobile plant and equipment systems • provision of clear and timely required support and advice on the implementation of mobile plant and equipment systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mobile plant and equipment systems may include:	• crushing and screening plants • gyratory / jaw crushers • cone crushers • double roll crushers • hammermills • double roll sledging crushers • tube feeders • slot feeders • apron feeders • roller and rotary feeders • vibratory feeders • reciprocating-plate feeders • screw feeders • conveyor belts • drive arrangements
Stakeholders may include:	• client • client representatives • government authorities • community groups • engineers • architects • contractors
Policies, **plans and procedures** may include:	• organisational commitment • corporate and environment policy • environmental impact assessment

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	• community consultation and involvement • objectives and targets • surveying program • documentation and records • operational and emergency procedures • responsibility and reporting structure • environmental impact, regulatory and legal compliance • survey review audits • emission and performance monitoring and measurement • land reclamation practices
Constraints may be related to:	• roadway size • pillar sizes • depth of cover and underlying / overlying strata • stress regimes • underground opening characteristics • water ingression • systems of mining • breaker liner supports • direction of mining
Contingencies may include:	• equipment failure • observation errors • movement • weather • injury • obstructions

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMPO502A Manage the interaction of heavy and light vehicles and mining equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the management of the interaction of heavy and light vehicles and mining equipment in the coal and metalliferous mining and extractive industries. It includes: planning and preparing; managing the interaction; and monitoring and reviewing operations.

Application of the Unit

This unit is appropriate for those working in management or as a technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the management and interaction of ***vehicles and mining equipment*** 1.2. Review the ***Traffic Management Plan***, ***policies***, ***plans and standard operating procedures*** or other site arrangements defined by site management for the interaction of vehicles and equipment within the site, on haul roads or on roads with public access 1.3. Identify and record site requirements for the interaction of transport systems and equipment 1.4. Identify ***contingencies*** and define other issues on the job, that will affect the interaction of the transport systems and equipment 1.5. Access and determine the appropriateness of standard operating procedures and revise if necessary
2. Manage the interaction	2.1. Monitor the implementation and effectiveness of workplace practices and procedures against the Traffic Management Plan, traffic interaction policies, plans and standard operating procedures 2.2. Identify, clarify and communicate requirements in the operation of vehicles and equipment to meet the Traffic Plan, Standard Operating Procedures, or special arrangements to meet any identified ***hazards*** 2.3. Ensure adequate records are collected of the operation of vehicles and equipment to allow assessment of safety and efficiency and to record any safety concerns raised by operations personnel 2.4. Ensure all appropriate signs, barriers, bunds, traffic control devices, road edge clearance markers are in place as defined in the Traffic Plan or Standard Operating Procedures

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	2.5. Identify hazards associated with interaction of transport and equipment and evaluate and respond to risks in accordance with established procedures 2.6. Manage interaction of vehicles and mining equipment to ensure safety and optimum efficiency
3. Monitor and review operations	3.1. Monitor and review the effectiveness of strategies put in place to safely control identified hazards and contingencies 3.2. Monitor the interaction of vehicles and equipment to ensure safety and optimum efficiency 3.3. Review recorded information to assist hazard identification or efficiency losses 3.4. Obtain specialist advice or assistance where required and seek approval for major changes to the Traffic Management Plan or Standard Operating Procedures from ***stakeholders*** 3.5. Implement rectification requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to manage the interaction of heavy and light vehicles and mining equipment:

- apply legislative, organisation and site requirements and procedures
- apply interpersonal skills
- coordinate of others
- manage information
- apply problem solving techniques
- apply analysis techniques
- use measuring equipment
- write clear reports
- apply communication skills
- apply planning skills

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to manage the interaction of heavy and light vehicles and mining equipment:

- capabilities and limitations of transport, mobile plant and equipment systems
- functions of vehicles and site equipment
- risk management principles
- work role definitions
- reporting methods and alternatives
- relevant regulations, licenses and permits
- emergency procedures and obligations
- community expectations
- consultative strategies

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the management of the interaction of heavy and light vehicles and mining equipment • implementation of procedures and techniques for the safe, effective and efficient management of the interaction of heavy and light vehicles and mining equipment • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the management of the interaction of heavy and light vehicles and mining equipment • consistent successful management of the interaction of heavy and light vehicles and mining equipment
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the management of the interaction of heavy and light vehicles and mining equipment
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary

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	evidence of the candidate's: • working with others to undertake and complete the management of the interaction of heavy and light vehicles and mining equipment • provision of clear and timely required support and advice on the interaction of heavy and light vehicles and mining equipment
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Interpret is defined as:	• the understanding needed by the person within their job role
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Vehicles may include all machines involved in production or those that have access to the operational and trafficable areas at the site, such as:	• haul trucks • scrapers • maintenance trucks and service vehicles • cranes • water trucks or service vehicles • graders and road construction equipment • 4 wheel drive passenger vehicles • buses and personnel carriers • bull dozers and tractors, trailers and floats • excavators or mining machinery travelling from site to site
Equipment may include:	• excavators • shovels • bucket wheel excavators • mobile crushers and loaders • other mobile plant or heavy earth moving equipment • water and service machines
Traffic management plan, **policies**, **plans and standard operating procedures** may include:	• organisational commitment • road layout, permanent and temporary roads • road design principals and standards for bends, ramps loading, dumping • separation, overtaking, stopping, speed limits • signage, barriers, lights, edge marking

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	• bends, ramps, loading and unloading point • access to the haul way • give way rules • types of vehicles permitted on different roads, haul trucks, mining equipment, personnel carriers, 4 wheel drives, busses • communication between vehicles • travelling on or crossing public roads • public access to site roads • community consultation and involvement • objectives and targets • surveying program • documentation and records • operational and emergency procedures • responsibility and reporting structure • work environmental impact, regulatory and legal compliance • reviews/audits • significant incident alerts
Contingencies may include:	• vehicle and equipment failure • road design • road condition • road works whilst road under operation • normal and special speed controls • uneven or overloading of vehicles • road side repairs or refuelling • different sized vehicles using the roadway • vehicles with different ability to accelerate, brake, turn and negotiate route • visibility differences in vehicles as well as impact of weather or light • change to lighting adequacy, inadequacy • signage for normal and abnormal operation • how to change traffic plan for operational or contingency reasons • observation errors • operator error • movement of plant or ground • weather, sun, rain, fog, light and dark • accident • injury and • obstructions • changing environment

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	• parking • overhead power
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Stakeholders may include:	• site operator • site workers • site management • site supervisors • mines inspector • government authorities • community groups • engineers • contractors

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMPO503A Manage laser levelling of operating plant

Modification History

Not applicable.

Unit Descriptor

This unit covers managing of laser levelling of operating plant in resources and infrastructure industries. It includes: planning for, implementing and monitoring laser levelling.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles, within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the laser levelling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the managing of laser levelling of operating plant 1.2. Interpret design to identify laser levelling to be implemented 1.3. Check design for internal inconsistencies 1.4. Identify and contact ***stakeholders*** according to organisation guidelines 1.5. Identify and obtain project resources to meet requirements 1.6. Assess hazards and determine plan to safely manage identified risks
2. Implement laser levelling	2.1. Accurately identify alignments, heights or grades to be transferred/established 2.2. Set up equipment to utilise the laser techniques to provide alignment signals 2.3. Document operational procedures for the effective utilisation of these signals within the mine plan 2.4. Document regulation reporting and site requirements to be followed during operations 2.5. Document emergency procedures 2.6. Identify and contact stakeholders according to organisation guidelines 2.7. Manage project resources
3. Monitor laser levelling	3.1. Monitor effectiveness of ***policies***, ***plans***, ***procedures*** and workplace practices of laser levelling against objectives, timelines, key performance indicators and regulations 3.2. Arrange validating laser levelling techniques ensuring correct identification or ***spatial components*** 3.3. Compare measurements against specification and against project requirements 3.4. Identify inconsistencies possible or improvements in levelling program 3.5. Monitor the impact of ***contingencies*** 3.6. Monitor effective use of resources

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to Manage laser levelling of operating plant:

- apply legislative, organisation and site requirements and procedures
- use laser levelling equipment
- develop responsibility/motivation
- demonstrate policy management skills
- demonstrate interpersonal skills
- liaise with other parties
- coordinate others
- manage information
- apply problem solving skills
- use measuring equipment
- write clear reports
- facilitate meetings

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to Manage laser levelling of operating plant:

- measurement techniques
- accuracy and precision requirements
- limitations of equipment, measuring and analysis guidelines
- project reporting guidelines
- risk management principles
- company organisation
- work role definitions
- reporting methods and alternatives
- relevant regulations, licenses and permits
- emergency procedures and obligations
- community expectations
- consultative strategies
- alternative documentation systems for procedures
- training systems
- emergency response and evacuation planning processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the management of laser levelling of operating plant • implementation of procedures and techniques for the safe, effective and efficient management of laser levelling of operating plant • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the application of laser levelling of operating plant • consistent successful management of laser levelling of operating plant
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the management of laser levelling of operating plant
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and

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	complete the application of laser levelling of operating plant • provision of clear and timely required support and advice on the application of laser levelling of operating plant
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Stakeholders may include:	• client • client representatives • government authorities • community groups • engineers • architects • contractors
Policies, **plans and procedures** relating to laser levelling may include:	• organisational commitment • corporate and environment policy • environment impact assessment • community consultation and involvement • objectives and targets • surveying program • documentation and records • operational and emergency procedures • responsibility and reporting structure • environmental impact, regulatory and legal compliance • emission and performance monitoring and measurement • land reclamation practices
Spatial components may include:	• position • dimension • height • direction

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	• grade • depth • slope • volume • flow rates
Contingencies may include:	• equipment failure • observation errors • movement • weather • injury • obstructions

Unit Sector(s)

Mobile Plant Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMSM301A Establish a mining claim

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment of a mining claim in the metalliferous mining industry. It includes preparing to establish a mineral claim and establishing a mineral claim. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to establish a mineral claim	1.1. Access, interpret and apply compliance documentation relevant to the work activity 1.2. Determine the application requirements and process, and the legislative requirements for applying for a mineral claim 1.3. Obtain maps and information associated with the mineral field where the claim is to be made 1.4. Identify available claim location and reference point/survey post from approved maps of mineral field
2. Establish the mineral claim	2.1. Locate and confirm the reference point/survey post in the field, closest to the area to be claimed 2.2. Inspect area and select relevant ***surveying equipment*** and take bearings and measurements from survey post to establish and ***mark*** the nearest corner of the claim according to legislative requirements 2.3. Take bearings and measurements to establish and ***mark*** the remaining corners of the claim to mandated size and shape and within designated boundaries 2.4. Establish ***claim boundaries*** according to legislative requirements 2.5. Draw up the ***description and diagram*** of the claim according to mining registrar's requirements for submission of the claim 2.6. ***Serve a notice*** of intention to apply for a claim on the occupier of the land 2.7. Submit all ***required documents and information*** for application for a minerals claim

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to establish a mining claim:

- apply legislative, organisation and site requirements and procedures for establishing a mining claim
- read and interpret maps
- draw survey maps
- identify hazards
- apply environmental constraints
- dispose of environmentally sensitive fluids and materials
- communicate clearly and concisely
- apply operational safety requirements
- maintain records

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to establish a mining claim:

- the requirements, processes and documentation for an application for a minerals claim
- legislative requirements associated with mineral claims
- machinery permits
- mineral field maps and information
- survey map requirements and design
- boundary marking methods
- basic surveying methods and equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing a mining claim • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of establishing a mining claim • working with others to undertake and complete the establishment of a mining claim that meets all of the required outcomes • consistent timely completion of establishing a mining claim that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the establishment of a mining claim

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Surveying equipment may include:	• magnetic compass • tape measure • lines • plumb bob • theodolite • 'dumpy' level
Markings may include:	• timber posts • steel pickets • claim number • details of the person/company who will be applying for the mineral claim
Claim boundaries may include:	• trenches • pegs • posts • rock/stone structure
Description and diagram of the claim may include:	• reference points and measured distances and angles to the proposed claim • location of all corners of the proposed claim • length of all sides between the corners • bearings of all sides taken from magnetic north and arrows pointing in the direction in which the bearings were taken • arrow showing direction of magnetic north • information on all neighbouring claims that have a common border • other information required by local legislation

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Serving a notice may be by:	• post • personally • through the Mining Registrar or equivalent
Legislation may include Acts and regulation dealing with:	• mining regulation • mining safety and health • mine inspection • OHS • explosives • environment • Native Title • machinery
Required documents and information may include:	• application forms • survey map and information • copy of notice to the landholder • identification • lodgement fee • a description, prepared in the manner prescribed by the regulations, of the land over which the mining lease is sought • an assessment of the mineral bearing capacity of the land and of the extent of any mineral deposits in that land • particulars of the financial resources available to the applicant • particulars of the technical advice available to the applicant • particulars of the program of work proposed to be carried out by the applicant on the area of land over which the mining lease is sought

Unit Sector(s)

Metalliferous Mining (Small Mines)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIMSM302A Plan small mine operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the planning of small mine operations in the metalliferous mining industry. It includes planning shaft locations to meet design criteria, designing and planning locations of ventilation shafts or drill holes, designing and planning mining workings, designing and planning materials handling processes and equipment, and developing a Mine Safety Management Plan. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan shaft location to meet design criteria	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan location of access shaft on a virgin claim to avoid potential ore-bearing ground 1.3. Design and plan shaft to minimise impact on the environment 1.4. Plan location of access shaft on a virgin claim to allow effective location, organisation and access to other mine facilities 1.5. Establish location of a second means of access (secondary shaft) to allow most effective exit from the mine in emergency situations 1.6. If claim is previously mined, ***inspect conditions*** of existing shafts to determine the most appropriate access and secondary shafts 1.7. Ensure that the access shaft is located in the appropriate place in relation to the planned mine ventilation system 1.8. Plan layout and configuration of ***surface facilities*** in relation to access and secondary shaft 1.9. Record shaft location on the mine plan
2. Design and plan location of ventilation shafts or drill holes	2.1. Plan the mining sequence throughout the life of the mine to determine the location of ventilation shafts or drill holes 2.2. Design and determine the location of ventilation shafts for any proposed secondary ventilation system to deliver fresh air to all active drives
3. Design and plan mine workings	3.1. Design mine workings to facilitate minerals discovery 3.2. Design and plan the drive pattern, opening size and development sequence to best extract minerals and for mine ground stability 3.3. Design mine layout to maximise production and movement of materials to the surface

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	3.4. Determine room and pillar configuration and plot on the mine plan
4. Design and plan materials handling process and equipment	4.1. Design and plan the handling of waste material stored on the surface of the mine 4.2. Design and plan for the installation of hoisting systems and equipment to meet materials movement and compliance documentation 4.3. plan the system and method for the storage, transport and handling of hazardous materials and/or explosives
5. Develop the mine safety management plan	5.1. Develop the OHS policy for the mine's operations 5.2. Develop and document procedures and methods for the ***factors covered by the mine safety management plan*** 5.3. Design and develop document control documents and ***log book*** 5.4. Gain approval for the Mine Safety Management Plan from relevant authorities/agencies

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to plan small mine operations:

- apply legislative, organisation and site requirements and procedures for the planning of small mine operations
- apply design and planning principles and methods
- apply operational safety requirements to mine planning
- maintain records
- design and document procedures
- design systems for environmental constraints
- design disposal systems for environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to plan small mine operations:

- geology associated with ore-bearing ground
- shaft design requirements and parameters
- mine layout principles and design parameters
- design criteria for planning mine operation
- materials handling and transport
- principles of ventilation and air flow
- hazardous materials handling
- surface installations and equipment
- pillar configuration/pillar design and layout
- assessment of mine ground conditions
- characteristics and properties of roofs
- hazards affecting pillar design and development
- hoisting systems, equipment and legislative requirements
- pillar extraction methods and safety requirements
- operational safety requirements
- emergency procedures
- environmental requirements
- mine safety management planning

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for planning small mine operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of planning small mine operations • working with others to undertake and complete the planning of small mine operations that meets all of the required outcomes • consistent timely completion of small mine operations planning that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the planning of small mine operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • design criteria • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Design criteria may include:	• safest possible design • lowest capital cost • lowest operating cost • most dependable design • most efficient design • most flexible design
Inspection of conditions may include:	• ground conditions at the bottom of the shaft • the presence of a shaft pillar • the amount of support required • proximity of workings in neighbouring claims • potential for slope of the land to allow surface water to flow into mine shafts
Surface facilities may include:	• temporary stockpiles • loading facilities • generator sets • compressors • work benches • hoisting equipment
Legislation may include Acts and Regulation dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Factors covered by the Mine Safety Management Plan may	• document control • hazard management

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typically include:	• risk assessment and control • emergency response • training • safe work procedures • maintenance • work environment • control of persons • fitness for work • accident and incident reporting
Log book is a record of day-to-day activities which may include:	• hazard identification and implemented controls • hazards reported and their rectification • daily routine inspections • pre-start equipment checks • training carried out (including inductions) • injuries/accidents • maintenance • contractors • mine environment

Unit Sector(s)

Metalliferous Mining (Small Mines)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMSM303A Install underground shaft

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of ground shafts in the metalliferous mining industry. It includes excavating and fitting out shafts. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Excavate shaft	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Inspect and evaluate site and ground conditions at the planned shaft location to determine the ***type of shaft*** to be sunk 1.3. Identify and address potential risks and hazards 1.4. Conduct or facilitate ***shaft excavation*** in planned location and type 1.5. ***Stabilise unconsolidated ground*** to prevent falls of ground and shaft collar erosion 1.6. Ensure shaft is supported by shaft ***pillar*** to ensure the integrity of the bottom section of the shaft 1.7. Secure area over shaft collar to prevent surface water inflow 1.8. Ensure that brow area near the bottom of the shaft, and the geology and walls, are visible for ***inspection***
2. Fit out shaft	2.1. Fit access ladders securely in shaft in accordance with shaft conditions and code of practice 2.2. Install hoisting equipment at the surface of the shaft 2.3. Ensure that ***services*** supply devices to the shaft wall are fixed away from shaft conveyance equipment 2.4. Install ***shaft protection*** to prevent falls by people and animals, and unauthorised entry into the mine 2.5. Ensure that access shaft is free of unnecessary equipment and fixtures to allow unrestricted movement of materials

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install underground shafts:

- apply legislative, organisation and site requirements and procedures for installing underground shafts
- apply operational safety requirements
- install secondary support devices
- assess and address hazards
- maintain records
- identify faults
- apply environmental constraints
- dispose of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install underground shafts:

- assessment of mine ground conditions
- shaft location and types
- shaft excavation methods and equipment
- safety requirements for shaft excavation
- legislative requirements for shaft excavation and use
- services installed in mine shaft
- fitting and locating services in shaft
- shaft protection methods
- pillar design and configuration
- emergency procedures
- environmental requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing underground shafts • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installing underground shafts • working with others to undertake and complete the installation of underground shafts that meets all of the required outcomes • consistent timely completion of underground shaft installation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of underground shafts

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements, conditions and procedures • mine requirements • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **shaft** is a vertical opening from the surface to the underground workings	
Type of shafts may include:	• square • rectangular • oval • circular
Shaft excavation may be carried out by:	• drilling rigs • hand tools • hand drilling and blasting
Stabilisation of unconsolidated ground may include:	• timber • corrugated iron • tubing • concrete ring
Inspections may include those for:	• cracks • strata separation • other structural faults
Pillars are the primary means of roof support required to hold up the mass of ground between the underground mine workings and the surface and may be:	• randomly spaced • regularly spaced • square • rectangular • round
Services may include:	• water pipes • compressed air lines

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	• hydraulic systems and equipment • electric cabling • communication wires • ventilation ducting
Shaft protection may include:	• extending collar sleeve above ground level • installing gate • providing a fenced enclosure • installing warning signs

Unit Sector(s)

Metalliferous Mining (Small Mines)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMSM304A Inspect small mines operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the inspection of small mine operations in the metalliferous mining industry. It includes preparing for inspections activities and inspecting mine operations. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for inspection activities	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm mine ***operational information*** from mine records and planning documents 1.3. Obtain and confirm future planned operations information related to the work area and confirm with appropriate people 1.4. Access and interpret geological and survey data to assess the effect on mine inspection activities 1.5. Obtain and interpret ***legislative*** and site requirements 1.6. Access ***safety information and procedures*** which may impact on mine operations 1.7. Identify and access all recording and reporting documents required by ***legislation*** and local mine procedures 1.8. ***Coordinate*** activities with others at site prior to commencement of, and during inspections
2. Inspect mine operations	2.1. Conduct ***inspections*** as detailed in legislative requirements and local mine procedures 2.2. Respond immediately to instances of non-compliance to regulatory or other operational practices which endanger personnel 2.3. Discuss inspection findings with responsible parties and initiate a response to restore operational safety and site compliance 2.4. Record results of inspections and process records in accordance with legislative requirements and local mine procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to inspect small mine operations:

- apply legislative, organisation and site requirements and procedures for the inspection of small mine operations
- read, explain and apply:
  - technical information
  - site/legislative requirements
  - job priorities
- apply geological and survey information
- recognise potential hazards and apply corrective measures according to site/legislative procedures
- provide feedback
- prepare technical reports
- investigate and report on incidents

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to inspect small mine operations:

- site machinery and equipment safety requirements
- legislative and site requirements and procedures
- site/legislative requirements for inspections
- geological, geographical and survey data
- extractive operations
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- risk management procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for inspecting small mine operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of inspecting small mine operations • working with others to undertake and complete the inspection of small mine operations that meets all of the required outcomes • consistent timely completion of small mine operations inspection that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the inspection of small mine operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Operational information may include:	• mine layout and plan • previous shift inspection reports • personnel and equipment availability • work and equipment locations • production targets and other work requirements • incidents • hazards and potential hazards • coordination requirements/issues
Safety information and procedures may be contained in:	• legislation and regulations/relevant Australian standards • Safety Management Plan • OHS policy • code of practice • manufacturer's instructions • safe working or job procedures (or equivalent) • emergency response plan • incident investigation models
Coordinate may be to:	• plan activities • set priorities for activities • establish liaison channels with other personnel, neighbouring mines, and regulatory bodies • ensure work and safety requirements are passed to and reinforced with safety, and operational personnel and contractors
Inspections required include all	• working on or around excavation areas

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safety aspects of:	• machinery and equipment • mines services • working faces • stockpiles • shafts • installed safety measures
Legislation may include Acts and regulation dealing with:	• mining safety and health • mine inspection • OHS • explosives • Dangerous Goods Act • environment

Unit Sector(s)

Metalliferous Mining (Small Mines)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMSM305A Conduct materials extraction operations underground

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of underground materials extraction operations in the metalliferous mining industry. It includes planning and preparing for operations, operating machinery and equipments to extract materials, and carrying out machinery and equipment maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Confirm ***work requirements*** before proceeding 1.3. Select relevant equipment and survey mine workings to follow/verify planned operation 1.4. Access and apply ***safety information and procedures*** throughout the work 1.5. Inspect shaft and roof stability 1.6. Establish ***communication*** system, methods and protocols with other personnel
2. Operate machinery and equipment to extract materials	2.1. Coordinate mining activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out ***machinery and equipment*** pre-start, start-up, shutdown and isolation procedures in accordance with manufacturer's instructions and recommended mining practices 2.3. Operate ***machinery and equipment*** in accordance with manufacturer's instructions and recommended mining practices to extract and load materials 2.4. Operate/manoeuvre ***machinery*** to extraction location according to manufacturer's instructions and recommended machinery operation practices 2.5. Cut drives and faces to planned sequence and site conditions, maintaining operational parameters in accordance with the mine work plan 2.6. Identify and rectify factors adversely affecting production and monitoring systems alarms in accordance with site procedures 2.7. Identify/monitor and respond to changing geological conditions to maintain safety and production levels 2.8. Recognise and respond to ***hazardous and***

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	emergency situations
3. Carry out machinery and equipment maintenance	3.1. Carry out ***machinery and equipment*** inspections and fault finding in accordance with manufacturer's instructions and site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and recommended procedures and practices 3.3. Carry out minor maintenance to manufacturer's instructions and recommended procedures and practices 3.4. Process records in accordance with site and legislative requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct materials extraction operations underground:

- apply legislative, organisation and site requirements and procedures for the conduct of underground materials extraction operations
- apply operational safety requirements
- communicate with other personnel
- interpret manufacturer's /supplier's manuals
- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply diagnostic and fault finding techniques
- use hand and power tools
- maintain equipment records
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct materials extraction operations underground:

- operational safety requirements and procedures
- machinery and equipment characteristics, technical capabilities and limitations
- machinery and equipment operational procedures
- mine geology and survey data associated with ore-bearing ground
- ventilation systems
- machinery and equipment maintenance requirements and procedures
- site environmental requirements and constraints relevant to machinery and equipment operations
- pillar configuration, design and layout
- assessment of mine ground conditions
- characteristics and properties of roofs and walls
- emergency procedures
- pillar extraction methods and safety requirements
- maintenance procedures
- hazardous materials handling
- environmental requirements

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- hoisting systems, equipment and legislative requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of underground materials extraction operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of underground materials extraction operations • working with others to undertake and complete the conduct of underground materials extraction operations that meets all of the required outcomes • consistent timely completion of underground materials extraction operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of underground materials extraction operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Machinery and equipment may include:	• hydraulic/pneumatic digger • electric digger • electric/hydraulic bogger • hoists • bobcat • loader • tracked vehicle • tyred vehicle • electric/pneumatic jack hammer
Work requirements may include:	• equipment and plant (including any defects) • mining sequence • achievement targets • essential survey data • geological conditions • essential environmental information • hazards • potential hazards • coordination requirements/issues • room and pillar layout
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • Safety Management Plan • OHS policy • code of practice • manufacturer's instructions • safe working procedures (or equivalents)

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	• recognised standards
Communications may include:	• radio • telephone • audible signals (bells, whistles, sirens) • physical signals • written and verbal means
Hazards/potential hazards may include:	• gas accumulation • ignition • loss of ventilation • breaking into neighbouring workings • roof and wall collapse • water ingress • floor condition • creep

Unit Sector(s)

Metalliferous Mining (Small Mines)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMSM306A Design and maintain pillar system and ground control

Modification History

Not applicable.

Unit Descriptor

This unit covers the design and maintenance of pillar systems and ground controls in the metalliferous mining industry. It includes designing pillar configurations to maximise safe materials extraction, developing pillar systems, and extracting pillars. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Design pillar configuration to maximise safe material extraction	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Determine location of materials/ore to determine ***design parameters*** 1.3. Identify the potential hazards which could have an effect on ***pillar*** design and layout 1.4. Identify the ***characteristics and properties*** of the roof to determine the span that can stand unsupported 1.5. Identify ground conditions where ***secondary support will be needed*** 1.6. Evaluate the ***effect of any adjacent mines*** and incorporate in ***pillar*** design
2. Develop pillar system	2.1. Plan and prepare for ***pillar*** development according to pillar design parameters 2.2. Identify, address and/or report risks and hazards 2.3. Select and use appropriate ***personal protective equipment*** 2.4. Visually ***inspect work area*** to ensure safe access 2.5. Ensure work area is properly ventilated before entry and is free of dust and fumes 2.6. Inspect and assess site conditions to determine if scaling is required and take appropriate action 2.7. Ensure that ***dust suppression and/or extraction*** is prepared and ready for use 2.8. Arrange ***communications*** with other relevant personnel 2.9. Conduct ***pillar*** development safely and efficiently 2.10. Continuously monitor ground conditions and modify operation to maintain safe conditions
3. Extract pillars	3.1. Identify the strategic ***pillars*** which must not be removed for roof stability 3.2. Establish and observe a retreat system 3.3. Prop ground surrounding ***pillar*** before ***pillar*** removal

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	3.4. Extract selected ***pillars*** starting furthest from shaft, in a systematic manner 3.5. Prop ground area previously held by the removed ***pillars*** 3.6. Continuously monitor ground conditions and modify operation to maintain safe ***pillar*** removal

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to design and maintain pillar systems and ground control:

- apply legislative, organisation and site requirements and procedures for the design and maintenance of pillar systems and ground control
- apply operational safety requirements
- install secondary support devices
- operate communications systems
- operate extraction plant and machinery
- maintain records
- identify faults
- apply environmental constraints
- dispose of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to design and maintain pillar systems and ground control:

- pillar configuration
- assessment of mine ground conditions
- pillar design and layout
- characteristics and properties of roofs
- dust suppression methods and equipment
- hazards affecting pillar design and development
- secondary support methods and installation techniques
- pillar extraction methods and safety requirements
- operational safety requirements
- communication systems
- emergency procedures
- environmental requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for designing and maintaining pillar systems and ground control • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of designing and maintaining pillar systems and ground control • working with others to undertake and complete the design and maintenance of pillar systems and ground control that meets all of the required outcomes • consistent timely completion of designing and maintaining pillar systems and ground control that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the design and maintenance of pillar systems and ground controls

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Pillars are the primary means of roof support required to hold up the mass of ground between the underground mine workings and the surface and may be:	• randomly spaced • regularly spaced • square • rectangular • round
Design parameters may include those for:	• single-level mining • multiple-level mining • thick-level mining • decline-access mining
Secondary support may include:	• rock bolts • props
Effects of adjacent mines may include:	• water levels in old or currently unworked claims if a breakthrough occurs • stresses transferred through the rock due to the excavations made in the adjacent claims • the requirements for boundary pillars to be left • any falls which may act as a warning • the presence of geological discontinuities
Characteristics and properties may include:	• weight of upper strata • vertical compressive force • discontinuities • faults • separation cracks • different-coloured layers • different textures • iron oxide stains

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	• bleaching • joints • blows • bands
Personal Protective Equipment may include:	• lamp • safety helmet • eye protection • hearing protection • protection from atmospheric contaminants (dust/oil mist) • hand protection • overalls • safety footwear
Work area inspections may include:	• travel ways • footings • access • retreat • fumes or dust • ventilation air flow • ground conditions • services
Dust suppression and/or extraction may include:	• fans (electric or compressed air) • ventilation bags • mobile or fixed sprays • vent devices • air movers • watering down work area
Communications may include:	• radio • telephone • computer • lights • audible signals (bells, whistles, sirens) • physical signals • written and verbal means

Unit Sector(s)

Metalliferous Mining (Small Mines)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIMSM307A Install and maintain ventilation systems and equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation and maintenance of ventilation systems and equipment in the metalliferous mining industry. It includes establishing mine ventilation systems, installing/constructing ventilation systems, and monitoring and maintaining mine ventilation systems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish mine ventilation system	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Inspect and evaluate mine configuration, or obtain advice from appropriate source, to identify the most effective ***mine ventilation method*** 1.3. Determine ventilation system configuration and location of ***ventilation equipment and devices*** for effective mine ventilation 1.4. Identify and obtain ***ventilation equipment and devices*** necessary to establish the selected ventilation method
2. Install/construct ventilation system	2.1. ***Coordinate*** activities with others at the site prior to commencement of, and during, the work activity 2.2. Prepare work site in accordance with mine requirements to ensure a safe working environment 2.3. Install ventilation equipment in designated location in accordance with manufacturer's /supplier instructions and site safe operating procedures 2.4. Construct ventilation ***device*** in designated location in accordance with manufacturer's and/or site specific requirements 2.5. Recognise and respond to ***hazardous*** and emergency situations in accordance with manufacturer's instructions and/or site procedures
3. Monitor and maintain mine ventilation system	3.1. Carry out inspections of ventilation equipment, devices and system to ensure safe efficient operation 3.2. Detect and measure airflow and adjust ventilation system to maintain adequate flow of air through the mine 3.3. Monitor and maintain mine air quality to identify ***impurities*** and ***contaminants*** to ensure respirability of mine air 3.4. Obtain and prepare necessary replacement ***materials***/***equipment*** required for the work in accordance with work practices

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	3.5. Carry out maintenance work 3.6. Maintain records/reports

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install and maintain ventilation systems and equipment:

- apply legislative, organisation and site requirements and procedures for installing and maintaining ventilation systems and equipment
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- use hand and power tools
- apply construction techniques
- inspect and maintain equipment, devices and materials
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install and maintain ventilation systems and equipment:

- operational safety systems related to ventilation systems, equipment and devices
- statutory and site ventilation requirements
- mine operational procedures
- basic mine geology and survey information related to ventilation systems
- types and applications of ventilation systems
- ventilation equipment and device construction, processes and operating characteristics
- ventilation device equipment and material characteristics
- site environmental requirements and constraints related to ventilation systems
- gas monitoring and testing
- air flow measurement
- changing environmental conditions
- risk management procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing and maintaining ventilation systems and equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installing and maintaining ventilation systems and equipment • working with others to undertake and complete the installation and maintenance of ventilation systems and equipment that meets all of the required outcomes • consistent timely completion of ventilation systems and equipment installation and maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation and maintenance of ventilation systems and equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mine ventilation methods may include:	• natural ventilation • mechanical ventilation • auxiliary ventilation
Ventilation equipment and devices may include:	• fans • pipes • compressed air injectors • ventilation tubing • barriers
Materials for devices may include:	• plastic sheeting • timber • conveyor belt
Hazards may include:	• irrespirable atmospheres • noxious atmospheres • flammable • explosive mixtures
Materials/equipment may include:	• grout pumps • cement mixer • compressed air drill • borer • hoses • hand tools • scaffolding • level • water traps • sampling lines • pressure gauges

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	• gas drainage line • shut off valves • oxygen breathing apparatus • gas detection equipment
Coordination may include:	• planning activities • setting priorities for activities • establishing liaison channels with other personnel, neighbouring mines, and regulatory bodies • ensuring work and safety requirements are passed to and reinforced with safety, and operational personnel and contractors
Impurities may include:	• carbon monoxide • sulphur dioxide • oxides of nitrogen • radon • methane • hydrogen sulphide • diesel exhaust fumes
Contaminants may include:	• pulmonary dusts • toxic dusts • explosive dusts • silica

Unit Sector(s)

Metalliferous Mining (Small Mines)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB201B Load, secure and unload drilling equipment and materials

Modification History

Not applicable.

Unit Descriptor

This unit covers the loading, securing and unloading of drilling equipment in the drilling industry. It includes: preparing for loading activities; loading, securing, protecting and unloading drilling equipment and materials; and conducting housekeeping activities.

Application of the Unit

This unit is appropriate for those working in drillers assistant and driller roles at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for loading activities	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.6. Select personal protective equipment appropriate for work activities 1.7. Select appropriate type of ***auxiliary equipment*** for work activities 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel and plant
2. Load equipment and materials	2.1. Identify load characteristics and use appropriate loading techniques to safely and efficiently move load 2.2. Identify hazardous and dangerous goods and adhere to relevant legislation and permit requirements 2.3. Assess and ensure that load characteristics and transport capacity meet approved parameters 2.4. Erect physical barricades and signage to prevent unauthorised entry to the area 2.5. Load ***equipment and materials*** in accordance with site procedures
3. Secure equipment and materials	3.1. Check the distribution of the load to ensure it is even, legal and within safe working capacity 3.2. Secure load at approved anchorage points 3.3. Adjust load restraint devices to ensure load is secure during ***transport*** 3.4. Protect load from weather conditions using approved coverage devices

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	3.5. Inspect the load for security to travel 3.6. Complete all required documentation
4. Conduct housekeeping activities	4.1. ***Clean*** loading and securing equipment to maintain condition of equipment and ensure safe and efficient operations 4.2. Clean and store auxiliary service equipment 4.3. Manage and report hazards to maintain a safe working environment
5. Unload equipment and materials	5.1. Assess location, stowage and remaining load before commencement 5.2. Unload in a safe and effective way making use of lifting aids and applications if required 5.3. Identify any equipment and materials requiring special handling 5.4. Relocate material in a manner that considers the heights, weight loading, size and crushability of the equipment and materials

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to load, secure and unload drilling equipment and materials:

- apply legislative, organisation and site requirements and procedures
- apply hazard identification procedures
- apply hazardous goods handling techniques
- apply defects reporting procedures
- apply safe work practices
- use hand and power tools
- read and comprehend simple statements in English
- identify containers and goods coding, ADG and IMDG markings and, where applicable, emergency information panels, and take appropriate action
- apply communication and recording skills
- apply manual and mechanical handling techniques
- apply basic maintenance skills
- apply knots, load securing devices and attachment points for loaded vehicles

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to load, secure and unload drilling equipment and materials:

- relevant Australian standards/regulations including state/territory mass & loading regulations
- Australian regulations and code of practice for the handling and transport of dangerous goods and hazardous substances
- contaminant identification and management
- emergency procedures
- environmental procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- hazardous goods procedures and consequences of spills
- identifying repair requirements
- isolation procedures
- site operational system
- operational procedures and checks

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- night and day working procedures
- relevant OHS procedures
- signage erection procedures
- wet and dry working procedures
- load positioning requirements
- methods of preventing shifting of loads and their importance
- number and types of lashings to apply, fixing points and basic knots
- safe carrying of loads
- licences and permits requirements
- requirements for the use, transport and storage of LPG and LPG appliances

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for loading, securing and unloading of drilling equipment and materials • implementation of requirements, procedures and techniques for the safe, effective and efficient loading, securing and unloading of drilling equipment and materials • working with others to undertake and complete the loading, securing and unloading of drilling equipment and materials that meets all of the required outcomes • consistent timely loading, securing and unloading of drilling equipment and materials that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the loading, securing and unloading of drilling equipment and materials

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures relating to:
	  • worksite safety and health
	  • mine inspection
	  • OHS
	  • explosives
	  • dangerous goods code
	  • Hazchem
	• manufacturer's guidelines and specifications
	• Australian standards
	• code of practice
	• Employment and Workplace Relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • achievement targets
	  • operational conditions
	  • obtaining of required permits
	  • out of bounds areas
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• terrain conditions • power lines • fences, gates

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	• natural disasters (e.g. floods) • electricity use in caravan parks, caravans • LPG appliances/canisters • other transported gas cylinders • portable and fixed winches • road transport hazards, e.g. braking with loads, camber, hills, rough surfaces • serviceability of slings, tow ropes, shackles, snatch blocks lashings, vehicle restraining structures, decks, steps and jacks
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • worksite personnel
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • fluid levels • job requirements • personnel • walk through site
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• materials handling equipment (e.g. turn tables, conveyors) • mobile equipment • mobile lifting equipment (e.g. cranes, forklifts)
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
Equipment and materials may include:	• drill string components • drill bits • drill rig spares • tools • drilling mud chemicals • cleaning materials and chemicals

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	• greases and oils
Clean may include methods such as:	• forced air • hosing with water • suction • manual cleaning • application of cleaning fluids

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB202A Set up/pack up drill site

Modification History

Not applicable.

Unit Descriptor

This unit covers the setting up and packing up of drill sites in the drilling industry. It includes: planning and preparing for setting up and packing up of drill sites; assisting the driller to set up drill rig; setting up and dismantling ancillary equipment; and packing up drill site.

Application of the Unit

This unit is appropriate for those working in drillers assistant roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
• Plan and prepare for setting up and packing up of drill sites	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Test working order of required safety equipment 1.6. Erect and observe warning signs and barriers as directed 1.7. Store materials as directed to minimise hazards and contamination
2. Assist driller to set up drill rig	2.1. Carry out a range of instructions on work scheduling in logical sequence 2.2. Assist unloading rig and equipment using a range of measures to ensure no damage 2.3. Set out tools and/or equipment needed to complete the hole in the work area 2.4. Take appropriate weather precautions for equipment and stores
3. Set up and dismantle ancillary equipment	3.1. Set up and dismantle ancillary equipment in accordance with instructions 3.2. Provide connecting services to and from equipment in accordance with instructions 3.3. Carry out a pre-start check in accordance with requirements
4. Pack up drill site	4.1. Clean area to policies and procedures 4.2. Load and secure equipment as directed 4.3. Remove waste and unwanted materials from site 4.4. Clean, maintain and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to set up and pack up drill sites:

- apply legislative, organisation and site requirements and procedures
- apply manual and mechanical handling techniques
- apply communication by hand signals for vehicle positioning and mast raising
- apply decontamination procedures for rig and equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to set up and pack up drill sites:

- occupational health and safety procedures, including site and equipment safety requirement
- importance of drill pad stability and rig alignment
- safe storage requirements and procedures for hazardous substances
- environmental requirements and procedures, including reducing: contamination and pollution; and containing, dispersing and disposing of waste fluids
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- basic geological and technical data
- extreme weather precautions
- how to clean, dig and protect and mud pits and drains, where required

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for setting up and packing up of drill sites • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the setting up and packing up of drill sites • working with others to undertake and complete the setting up and packing up of drill sites that meets all of the required outcomes • consistent timely completion of the setting up and packing up of drill sites that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the setting up and packing up of drill sites

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• previous usage (e.g. builders or demolition residue) • electric wires (overhead or underground) • telephone lines or fibre optic cables • gas pipes • pressurised water pipes

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	• drains for water and sewer
	• overhead branches
	• available working space or confined space
	• environmental hazards, including:
	  • contaminated soil
	  • toxic substances
	  • in-hole gas
	  • wind direction and
	  • atmospheric contaminants, including dust and fumes

Coordination requirements may include	• driller • other equipment operators • maintenance personnel • supervisors • site personnel
Ancillary equipment may include:	• compressor • pumps • grout pump • mixing tanks • sample collection hopper/skip • support vehicle • water tank, temporary reservoirs, and pipelines • HF radio aerial, microwave dish • cyclones • sample storage • down hole test or installation equipment (packers, survey, water pressure test equipment, sampling devises) • core boxes • drill string components • tools

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIINHB203A Support drilling process

Modification History

Not applicable.

Unit Descriptor

This unit covers supporting the drilling process in resources and infrastructure industries. It includes: planning and preparing for supporting the drilling process, operating ancillary equipment, cleaning all equipment at drilling site, maintaining levels of supplies, and performing basic measurement and calculations.

Application of the Unit

This unit is appropriate for those working in drillers assistant roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for supporting the drilling process	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Operate ancillary equipment	2.1. Start-up, run, and close down ***ancillary equipment***
3. Clean all equipment at drilling site	3.1. Maintain clean working conditions to minimise any associated safety hazards 3.2. Clean and store vehicles routinely after use to requirements 3.3. Maintain machines and equipment in a clean and serviced condition at all times 3.4. Use cleaning equipment safely and effectively 3.5. Apply approved instructions and occupational health and safety requirements on the use of hazardous chemicals for cleaning and drilling 3.6. Ensure that all cleaning equipment is kept in good working condition
4. Maintain levels of supplies	4.1. Keep driller informed on current stock levels 4.2. Check on availability of consumable items in the workplace regularly 4.3. Complete record keeping, stock counts and paper work as required
5. Perform basic measurement and calculations	5.1. Read tape measure accurately to carry out simple measurements 5.2. Carry out simple ***calculations and measurements*** 5.3. Record legibly on all reports
6. Carry out basic operator maintenance	6.1. Identify hazards, and methods of minimising hazards, in conducting maintenance, particularly in the field

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	6.2. Carry out minor repairs and replacements as required 6.3. Overcome minor breakdowns and bogging using recovery techniques as required 6.4. Carry out vehicle washing and housekeeping regularly

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to support the drilling process:

- apply legislative, organisation and site requirements and procedures
- operate pressure cleaners
- apply basic operator servicing and maintenance of plant and vehicles
- apply communication procedures
- use lifting equipment
- identify weathered and fresh rock

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to support the drilling process:

- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- layout of basic hydraulic circuits
- hydraulic and pneumatic systems
- basic geological and technical data
- environmental requirements and procedures
- team roles and objectives
- interpretation and prediction techniques using graphical representation, e.g. maps and diagrams
- requirements to ensure cost effective operations, including work practices that limit damage to equipment and minimise use of consumables

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for supporting the drilling process • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of support of the drilling process • working with others to undertake and complete the support of the drilling process that meets all of the required outcomes • consistent timely completion of the support of the drilling process that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site

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	circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the support of the drilling process

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• spread of contaminants as a result of drilling or cleaning processes • working in proximity to drilling rig • use of high pressure air for drilling operations • entanglement in rotating pipes • string makeup and breakout hazards

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	• drilling equipment and down-hole tools
Coordination requirements may include	• driller • other equipment operators • maintenance personnel • supervisors • mine personnel
Ancillary equipment may include:	• generators (welding/lighting) • pumps • compressors • high pressure cleaning equipment (gernies) • power tools • hand tools • grout mixing • drill fluid (mud) mixing equipment
Cleaning equipment may include:	• pressure cleaning • chemical cleaning • manual cleaning • abrasive mechanical cleaning
Calculations and measurements may include:	• diameters of drill bits, casing, hole • rod volumes • hole volumes • tank volumes • annular volumes • length of casing

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB219A Assist with air drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers assisting with air drilling in resources and infrastructure industries. It includes planning and preparing for assisting with air drilling, supporting the air drilling process, collaring holes and inserting casings, handling samples, using restraining devices, mixing drilling fluids for air/foam drilling and carrying out basic maintenance of tools and equipment.

Application of the Unit

Air drilling is used for environmental, geotechnical, mineral exploration, mineral production, blast hole, seismic and water well drilling. This unit is appropriate for those working in drillers assistants roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for assisting with air drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Load, unload, move, handle, use and store rotary air drilling equipment and all associated tools, sampling devices and connecting equipment 1.6. Select and use appropriate ***personal protective equipment*** and protective clothing
2. Support the air drilling process	2.1. Fit and remove and measure correct ***bits*** and down-hole tools to/from the drill string 2.2. Prepare drill string in readiness for tripping and drilling 2.3. Sharpen drill bits in accordance with specifications 2.4. Add and remove ***drill rod*** to and from the drill string 2.5. Inspect and maintain ***drill pipe***, bits, threads and other down-hole equipment 2.6. Use ***pipe and casing handling equipment*** 2.7. Install and seal casing using the correct methods as per company policies/procedures 2.8. Use, install and maintain stuffing boxes and collar T pieces as per manufacturer's requirements
3. Handle samples	3.1. Obtain and/or lay out ***samples*** as required 3.2. Split, bag, label and store samples for transport according to workplace or site specific requirements 3.3. Clean and service ***sampling equipment*** as required 3.4. Obtain uncontaminated samples using

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	appropriate sampling methods 3.5. Take necessary safety precautions when handling potentially hazardous samples 3.6. Safely clear blockages in sample and delivery system 3.7. Note and report possible changes to sample quality due to blockages
4. Use restraining devices	4.1. Fit ***restraining devices*** 4.2. Identify ***dangers of high velocity samples*** in air drilling and take appropriate measures to minimise hazard
5. Mix drilling fluids for air/foam drilling	5.1. Wear appropriate protective clothing 5.2. Check labels and read and interpret safety information/ hazard codes 5.3. Mix the ***drilling fluid*** as required 5.4. Store drilling fluid components and ***additives*** safely and according to requirements
6. Carry out basic maintenance of tools and equipment	6.1. Perform inspections and routine checks on ancillary equipment such as air compressor and injection pump 6.2. Perform inspections and basic maintenance of pipe handling equipment 6.3. Observe OHS procedures in carrying out equipment maintenance 6.4. Select and maintain bit sharpening equipment in accordance with site specifications

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assist with air drilling:

- apply legislative, organisation and site requirements and procedures
- operate ancillary equipment such as air compressors, boosters and cyclones (equipment is to some extent dependent on the type of air drilling being carried out)
- apply basic maintenance and servicing of compressors and auxiliary equipment
- measure and identify hammer bits, shrouds and related components
- identify thread types in use on site
- identify bits in use and how to measure them
- use various rod handling equipment on site
- assist with the removal/adding of drill rods to the line string
- apply refuelling procedures for vehicles, drill rigs and ancillary equipment
- identify correct lubricants
- apply correct handling of samples
- apply good housekeeping principles
- disassemble, inspect and reassemble DTH hammers
- install restraining devices to pressure and delivery hoses
- inspect and replace inner tubes in RC pipe
- inspect and replace sealing devices in RC pipe
- install T piece to collar casing
- identify and mix of drill additives
- identification of bits
- apply basic maintenance of water delivery pumps
- apply vehicles cleaning procedures
- drive vehicles

Note: *these skills may not be used by ALL air drilling methods*

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to assist with air drilling:

- reasons for identification and care of samples including storage and transport
- OHS and environment requirements and procedures
- use of materials safety data sheets (MSDS)
- basic operation of compressors and the need for cleanliness when carrying out

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compressor maintenance • critical need to match threads with threads on tubular components • drilling operational requirements and procedures • theory behind sharpening bits • monitoring of sample quality to restrict contamination • importance of correct measurement of bits and other related components • methods for clearing blockages in air or rotary holes • methods of clearing blocked sample and delivery hoses • requirement of restraining devices on all high pressure and delivery hoses • potential hazards with the operation of rod handling devices

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with air drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient assisting with air drilling • working with others to undertake and complete the air drilling tasks that meets all of the required outcomes • consistent timely completion of assisting with air drilling tasks that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources • normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete air drilling tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazards may include:	• release of gases from formation or samples obtained • spread of contaminants as a result of drilling or cleaning processes • change in the chemistry of contaminants as a result of drilling and recovery of the samples • working in proximity to drilling rig • use of high pressure air for drilling operations • entanglement in rotating pipes • string makeup and breakout hazards • drilling equipment and down-hole tools will depend on the air drilling method being used
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • mine personnel
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Bits may include:	• tri-cone bits • blade bits • tungsten carbide 'core' bits • DTH hammer bits RC and conventional • PCD bits

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Rod and pipe may include:	• air core rods • casing • conventional drill pipe • dual wall reverse circulation drill pipe • API and IF threads
Pipe and casing handling equipment may include:	• rod clamps (hydraulic or manual) • manual handling • hoisting plugs • C spanner • hook and clam shell pipe or rod sling • hydraulic pipe/rod/casing spinner • mechanised rod handler • slips • slips basket
Samples may include:	• chip samples (RAB, Aircore, DTH hammer, RC samples) • 'core' samples from air core drilling
Sampling equipment may include:	• cyclones • sample splitters • wet samplers • rotary samplers
Restraining devices may include:	• internal cable whip checks • double eyelet sock type whip checks • full sock whip checks
Dangers of high velocity samples may be caused by:	• high wear rates on components • sample hose blockages • sample hose rupture
Drilling fluids and additives may include:	• air • foam • polymers • water

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIINHB205A Assist continuous flight auger drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the assisting with continuous flight auger drilling in resources and infrastructure industries. It includes planning and preparing for assisting with continuous flight auger drilling, assisting with augering process, obtaining samples, cleaning equipment, carrying out water sampling, and carry out basic maintenance of tools and equipment.

Application of the Unit

Flight auger drilling is used in environmental, foundation, geotechnical, minerals exploration, seismic and waterwell drilling.
This unit is appropriate for those working in drillers assistant roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for assisting with continuous flight auger drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Load, unload, move, handle, use and store continuous flight augers and all associated tools, ***sampling devices*** and connecting equipment 1.6. Set up and stabilise auger racks 1.7. Select and use appropriate ***personal protective equipment*** and protective clothing
2. Assist with augering process	2.1. Fit and remove bits to and from the lead auger 2.2. Lay out auger string in readiness for auger process 2.3. Insert remove augers from the drill string and assist with auger to auger connections 2.4. Regularly maintain cleanliness around the hole collar by removing spoil only when rotation is stopped 2.5. Observe housekeeping and site safety measures while conducting auger assistance and sampling duties
3. Obtain samples	3.1. Obtain and/or lay out disturbed ***samples*** from flights as required 3.2. Take necessary safety precautions when handling potentially contaminated samples 3.3. Bag, properly label and store undisturbed samples for transport in accordance with requirements 3.4. Obtain soil samples from SPT split spoon, undisturbed sample tube, direct push, coring bit or other down hole mechanical device used in sampling if required

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	3.5. Package SPT samples and label packages and include the test result if required 3.6. Clean and service undisturbed tubes, remove loose spoil, fit mechanical or wax seals, package, label and store undisturbed samples for transport if required 3.7. Remove and package samples obtained from hollow auger sampling devices or direct push applications when required
4. Clean equipment	4.1. ***Clean*** and reassemble sampling devices and associated equipment 4.2. Use high pressure cleaners and/or steam cleaning equipment to clean augers and equipment 4.3. Avoid or confine the spread of contamination from auger and equipment cleaning processes. 4.4. Follow safe work practices for use of cleaning equipment, chemicals and materials. 4.5. Bag, remove and dispose of or neutralise excess spoil from site operations
5. Carry out water sampling	5.1. Bail or pump holes in preparation for collection of water sample 5.2. Prepare, obtain and handle water sample bottles 5.3. Obtain a water sample from a bore hole 5.4. Fill, seal, label, store and transport correct volume water samples relevant for the analytical purpose or tests required using appropriate type containers 5.5. Remove or dispose of or neutralise excess water generated by sampling or cleaning processes that may be contaminated or harmful to the environment, plants, native animals, domestic stock or people
6. Carry out basic maintenance of tools and equipment	6.1. Perform inspection and checks on serviceability of augers including condition of flights, threads, socket connectors, D clips and bits 6.2. Inspect serviceability of pressure cleaning equipment, water sampling pumps, sample tubes, SPT equipment 6.3. Maintain all auger and sampling equipment

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	in serviceable condition 6.4. Observe occupational health and safety procedures in carrying out equipment maintenance

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assist with continuous flight auger drilling:

- apply legislative, organisation and site requirements and procedures
- operate ancillary equipment such as air compressors, boosters and cyclones (equipment is to some extent dependent on the type of air drilling being carried out)
- apply basic maintenance and servicing of compressors and auxiliary equipment
- measure and identify flight auger components
- identify thread types in use on site
- identify bits in use and how to measure them
- apply safe storage of tools
- use various load handling equipment on site
- assist the driller in the removal and adding of drill rods to the line string
- apply refuelling procedures for vehicles, drill rigs and ancillary equipment
- identify correct lubricants
- apply correct handling of samples
- apply good housekeeping principals
- install restraining devices to pressure and delivery hoses
- identification of bits to suit differing ground conditions
- drive vehicles

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assisting with continuous flight auger drilling:

- occupational health, safety and environment issues
- reasons for identification and care of samples including storage and transport
- safety measures required when sampling contaminated sites and landfills
- components of the chain of custody, including use of seals, field log book, chain of custody record, sample labels and sample request forms
- requirements and procedures for decontamination of sampling equipment, sample containers, pumps
- requirements for the preparation for sampling of contaminated site
- sampling methods using SPTs, thin walled samplers, continuous sampling system method, hand augers, trowels

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- basic soil description methods
- groundwater sampling protocols and types of sampling tools
- requirements and procedures for sampling procedure for volatile organic compound vials
- requirements and procedures for acid base sample preservation of groundwater samples
- procedures for field measurement of temperature, pH, specific conductance
- procedures for test bore and well abandonment
- grouting procedures
- calculation of volume in cylinders, tanks

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with continuous flight auger drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient assisting with continuous flight auger drilling • working with others to undertake and complete the continuous flight auger drilling tasks that meets all of the required outcomes • consistent timely completion of assisting with continuous flight auger drilling tasks that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete continuous flight auger drilling tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• release of gases from formation or samples obtained • exposure to contaminated soil or samples that may be toxic, poisonous, or harmful either through contact with skin or eyes, inhalation of vapours, or ingestion

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	• spread of contaminants as a result of drilling or cleaning processes • change in the chemistry of contaminants as a result of drilling, sampling or bottling • working in proximity to drilling rig • entanglement in flights • string makeup and breakout hazards • hazards with the use of high pressure/steam cleaners, grout mixers, pumps
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • mine personnel
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Sample types may include:	• grab samples • flight samples • hand auger samples • SPT samples • push tube samples • water samples • drive core samples taken through hollow stem augers
Label requirements may include:	• project number • bore number • depth interval • test result (e.g. SPT result) • date sampled • time sampled • soil description
Cleaning is to include decontamination of:	• sampling devices • tools • implements • hosing

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Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB206A Assist large diameter auger drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers assisting with large diameter auger drilling in civil construction and drilling industries. It includes planning and preparing for assisting with drilling, assisting with the augering process, mixing drilling fluids, cleaning equipment and carrying out basic maintenance of tools and equipment.

Application of the Unit

Large flight augers include short-flight and bucket augers and are used for foundation construction drilling. This unit is appropriate for those working in drillers' assistant roles, at worksites within:

- Civil construction
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for assisting with large diameter auger drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Load, unload, move, handle, use and store large diameter auger equipment and all associated tools and connecting equipment 1.6. Take necessary safety precautions when handling potentially contaminated spoil 1.7. Wear all necessary ***personal protective equipment*** and protective clothing when assisting with auger drilling
2. Assist with augering process	2.1. Fit and remove bits and cutting teeth to and from the cutting head 2.2. Insert remove augers and extension pipe to and from the drill string and assist with auger to auger connections 2.3. Regularly maintain cleanliness around the hole collar by removing spoil only when rotation is stopped 2.4. Observe housekeeping and site safety measures while conducting auger assistance
3. Mix drilling fluids	3.1. Wear appropriate protective clothing 3.2. Check, read and interpret safety information/hazard codes 3.3. Apply correct mixing procedure for the drilling fluid 3.4. Carry out storage of drilling mud components and additives safely and according to recommendations
4. Clean equipment	4.1. Use high pressure cleaners and/or steam cleaning equipment to clean augers and equipment 4.2. Avoid or confine the spread of contamination from auger and equipment

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	cleaning processes 4.3. Follow safe work practices for use of cleaning equipment, chemicals and materials 4.4. Remove and dispose of or neutralise excess spoil from site operations in accordance with environmental regulations
5. Carry out basic maintenance of tools and equipment	5.1. Perform inspection and checks on serviceability of augers including condition of flights, threads, socket connectors and D clips 5.2. Inspect serviceability of pressure cleaning equipment 5.3. Maintain all auger equipment in serviceable condition 5.4. Observe occupational health and safety procedures in carrying out equipment maintenance

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assist with large diameter auger drilling:

- apply legislative, organisation and site requirements and procedures
- apply basic maintenance and servicing of auxiliary equipment
- identify thread types in use on site
- identify bits in use and how to measure them
- apply safe storage of tools
- use various load handling equipment on site
- apply refuelling procedures for vehicles, drill rigs and ancillary equipment
- apply good housekeeping principals

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assist with large diameter auger drilling:

- occupational health, safety and environment requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with large diameter auger drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient assisting with large diameter auger drilling • working with others to undertake and complete the large diameter auger drilling that meets all of the required outcomes • consistent timely completion of assisting with large diameter auger drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the large diameter auger drilling tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• release of gases from formation or spoil recovered • exposure to contaminated soil that may be toxic, poisonous, or harmful either through contact with skin or eyes, inhalation of vapours, or ingestion

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	• spread of contaminants as a result of drilling or cleaning processes • change in the chemistry of contaminants as a result of drilling • working in proximity to drilling rig • working on construction sites in proximity to other heavy/mobile construction equipment • entanglement in flights or rotating pipe/kelly • string makeup and breakout hazards • hazards with the use of high pressure/steam cleaners
Coordination requirements may include:	• drill team • other equipment operators • maintenance personnel • supervisors • worksite personnel
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB208B Assist diamond core drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers assisting with diamond core drilling in the drilling industry. It includes planning and preparing for assisting with diamond core drilling; supporting the core drilling process; handling core samples; mixing drilling fluids; and carrying out basic maintenance of tools and equipment.

Application of the Unit

Core drilling may also be called wireline core drilling, diamond drilling or coring. It is used for environmental, geotechnical and mineral exploration drilling. This unit is appropriate for those working in as drillers assistants, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for assisting with diamond core drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Load, unload, move, handle and store core drilling equipment and all associated tools, sampling devices and connecting equipment 1.6. Set up and stabilise racks 1.7. Wear all necessary ***personal protective equipment*** and protective clothing when assisting with core drilling
2. Support the core drilling process	2.1. Assemble ***core barrel components*** under the direction of the driller 2.2. Prepare drill string in readiness for tripping and drilling 2.3. Add and remove ***drill rods*** and core inner tubes 2.4. Inspect inner tube and core barrel regularly and replace worn or damaged components under the direction of the driller 2.5. Observe housekeeping and site safety measures while supporting core drilling operations 2.6. Use ***rod and casing handling equipment*** according to recommended procedures 2.7. Store and handle diamond tools according to policy
3. Handle core samples	3.1. Dismantle inner tube for recovery of core ***samples*** 3.2. Take necessary safety precautions when handling potentially contaminated samples 3.3. Remove core samples from inner tube and place in core trays in correct sequence 3.4. ***Record*** information on core marker blocks

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	and core box accurately and legibly 3.5. Take precautions to ensure no surface contamination of cores and delicate cores are preserved 3.6. Follow safe stacking procedures for core boxes during storage and transportation 3.7. Apply appropriate lifting techniques when lifting full core boxes 3.8. Clean and lubricate inner tube components and re-assemble in preparation for the next run
4. Mix drilling fluids	4.1. Wear appropriate protective clothing when mixing ***drilling fluids*** 4.2. Check labels and read and interpret safety information and hazard codes 4.3. Apply correct mixing procedure for the drilling fluid 4.4. Carry out storage of drilling mud components and additives safely and according to recommendations 4.5. Perform ***basic tests on drilling fluids*** and record and report the results
5. Carry out basic maintenance of tools and equipment	5.1. Perform inspection and checks on serviceability of ***core barrel components*** 5.2. Perform inspections and routine checks on ancillary equipment 5.3. Perform inspections and basic maintenance on rod handling equipment 5.4. Observe occupational health and safety procedures in carrying out equipment maintenance and use correct personal protective equipment 5.5. Fit restraining devices to Kelly hoses

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assist with diamond core drilling:

- apply legislative, organisation and site requirements and procedures
- measure and identify core bits, reamer shells and related components
- identify thread types
- identify bits to suit
- apply safe storage requirements for diamond tools
- use various rod handling equipment and methods
- apply add and removal techniques for drill rods to the line string
- apply refuelling procedures for vehicles, drill rigs and ancillary equipment
- identify correct lubricants
- apply correct handling of samples
- apply good housekeeping principles
- correctly identify and mix drill fluids
- apply basic maintenance of mud and/or water delivery pumps

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to assist with diamond core drilling:

- occupational health, safety and environment issues
- reasons for identification and care of samples including storage and transport
- information to be placed on core boxes/core marker blocks
- diamond coring equipment, components and nomenclature
- requirements for collaring of bore holes, including equipment, methods, seals and installation
- collection of sludge and chip samples
- procedures and maintenance of stuffing boxes and/or 'T' pieces
- mud pumps and their applications
- basic knowledge of bit types and their applications to different geological conditions
- basic knowledge of fluid circulation system and its effect on hole integrity and sample quality

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with diamond core drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of assisting with diamond core drilling • working with others to undertake and complete the assisting with diamond core drilling that meets all of the required outcomes • consistent timely completion of assisting with diamond core drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the assisting with diamond core drilling

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• release of gases from formation or samples obtained • spread of contaminants as a result of drilling or cleaning processes • change in the chemistry of contaminants as a result of drilling and recovery of the core

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	samples • working in proximity to drilling rig • entanglement in rotating rods or casing • blowout of inner barrel splits • string makeup and breakout hazards • hazards with the use of grout mixers, pumps
Coordination requirements may include:	• driller • other equipment operators • maintenance personnel • supervisors • worksite personnel
Personal protective equipment may include:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Core barrel may include:	• double tube wireline core barrels • triple tube wireline core barrels • starter barrels • SPT sampling barrels • chrome barrel
Components may include:	Drill bits • blade bits • tricone bits • PCD bits • surface set diamond core bits and reamers • impregnated diamond core bits and reamers
Drill rods may include:	• wireline drill rod • casing • barrel and inner tube component threads • API and IF threads • 'Q' series threads
Rod and casing handling equipment may include:	• manual handling • mechanised rod handlers • hydraulic rod/casing spinners • hoisting plugs • hook and clam shell • foot clamps (hydraulic or manual)
Casing type may include:	• steel casing • PVC casing

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Samples may include:	• core samples • sludge samples from coring and rotary drilling • chip samples
Records may include:	• note book • plastic bags (write on) • hole logs • run sheets • shift report book • diaries • core blocks • core trays
Recorded information may include:	• project number • hole number • tray number • depth (per client and company requirements) • core loss details (i.e. depth interval) • core breaks (made by hammer during removal from inner tube)
Drilling fluids and additives may include:	• drill mud and additives • soluble oil • lost circulation material
Basic tests on drilling fluid may include:	• viscosity • mud weight • use of marsh funnel and cup
Core barrel components may include:	• outer tube • inner tube • split tubes (as required) • core lifter case and core lifter • head assembly • overshot assembly

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIINHB209A Assist guided boring

Modification History

Not applicable.

Unit Descriptor

This unit covers assisting with guided boring in resources and infrastructure industries. It includes: Planning and preparing; supporting the boring process; mixing the drilling fluid; and carrying out basic maintenance of tools and equipment.

Application of the Unit

This unit applies primarily to the horizontal directional drilling. It is appropriate for those working in a drillers assistant roles, at worksites within:

- Civil construction
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for assisting with air drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to guided boring activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** and risks associated with handling, loading, moving, using and storing guided boring equipment 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Load, unload, move, handle, follow workplace procedures for the use and storage of guided boring equipment and all associated tools and connecting equipment 1.6. Take necessary safety precautions when handling potentially contaminated spoil 1.7. Wear all necessary ***personal protective equipment*** and protective clothing when assisting with guided boring operations
2. Support the guided boring process	2.1. Fit/remove bits/reamers to/from the drill string 2.2. Lay out drill string in readiness for tripping/drilling 2.3. Add/remove drill pipe to/from the drill string 2.4. Inspect drill pipe, bits, threads and associated equipment for damage 2.5. Observe housekeeping and site safety measures while supporting guided boring operations 2.6. Use ***pipe/casing handling equipment***
3. Mix drilling fluids	3.1. Wear appropriate protective clothing 3.2. Check labels and read and interpret safety information/ hazard codes 3.3. Apply correct mixing procedure for the ***drilling fluid*** 3.4. Carry out storage of drilling mud components and additives safely and

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	according to manufacturer's recommendations 3.5. Perform basic tests on the fluid and the results recorded/reported as required
4. Carry out basic maintenance of tools and equipment	4.1. Perform inspections and routine checks on ancillary equipment such as mud pumps, water delivery pumps and mud hoppers 4.2. Perform inspections and basic maintenance pipe handling equipment 4.3. Observe occupational health and safety procedures in carrying out equipment maintenance

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assist guided boring:

- apply legislative, organisation and site requirements and procedures
- operation of ancillary equipment such as:
  - mud pumps
  - water supply pumps and
  - mud hoppers

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assist guided boring:

- occupational health, safety and environment requirements and procedures
- materials safety data sheets (MSDS)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with guided boring • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of assisting with guided boring • working with others to undertake and complete the guided boring that meets all of the required outcomes • consistent timely completion of assisting with guided boring that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete guided boring

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• drilling into underground utilities such as gas or power cables • release of gases from formation • spread of contaminants as a result of drilling or cleaning processes • change in the chemistry of contaminants as a result of drilling • working in proximity to drilling rig • working in proximity to traffic • entanglement in rotating pipes

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	• string makeup and breakout hazards
Coordination requirements may include	• other equipment operators • maintenance personnel • supervisors • site personnel
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Pipe/casing handling equipment may include:	• foot clamps (hydraulic or manual) • stilsons • break-out wrench • lifting plugs
Drilling fluids and additives may include:	• polymers • bentonite • water

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB210B Assist surface directional drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers assisting with surface directional drilling in coal and metalliferous mines. It includes planning and preparing for and supporting surface directional drilling and carry out basic maintenance of tools and equipment.

Application of the Unit

Directional drilling is undertaken for large diameter bores in hard rock or other difficult geology. The directionally drilled hole may subsequently be reamed and have product pipe installed, or it may be for coal seam methane drainage or similar. This unit is appropriate for those working in drillers assistants roles at surface worksites within:

- Coal mining
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for assisting with surface directional drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify, manage and report all potential ***hazards*** 1.3. Obtain, confirm and apply ***work instructions*** for the allocated task 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Load, unload, move, handle directional drilling equipment and all associated tools and connecting equipment 1.6. Select and use appropriate ***personal protective equipment*** and protective clothing
2. Support the surface directional drilling process	2.1. Position and number drill rods in readiness for drilling 2.2. Inspect ***in-hole drilling components*** for damage 2.3. Fit and remove ***in-hole drilling components*** to and from the drill string as instructed 2.4. Apply housekeeping 2.5. Maintain communication with all ***relevant personnel*** 2.6. Identify unplanned gas and water leakage and other environmental hazards
3. Carry out basic maintenance of tools and equipment	3.1. Monitor the drill rods for wear and damage and dress and grease threads in accordance with standard procedures or replace rods 3.2. Rotate rods 3.3. Monitor all drill equipment and hoses and ***ancillary equipment*** and carryout ***remedial action*** 3.4. Apply environmental controls 3.5. Ensure that drill fluids are appropriately contained and disposed of

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assist with surface directional drilling:

- apply safe manual handling practices
- apply ancillary equipment operating procedures including:
  - pumps
  - ventilation equipment
  - personal protective equipment
- apply operational communication procedures
- apply inspection and monitoring procedures
- apply maintenance procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assist with surface directional drilling:

- legislative, organisation's and site OHS requirements
- potential directional drilling hazards
- potential work environment hazards
- potential environmental hazards
- organisations operational requirements and procedures
- manufacturer's requirements and procedures
- specific handling requirements for drilling equipment
- housekeeping requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with surface directional drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient assisting with surface directional drilling • working with others to undertake and complete surface directional drilling that meets all of the required outcomes • consistent timely completion of the assisting with surface directional drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete surface directional drilling

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazards may include:	• handling, loading, moving, using and storing • working in proximity to drilling rig • inadequate communication with drill crew • entanglement in rotating equipment • inhalation or ignition of noxious or flammable gases

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

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Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • mine personnel
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
In-hole drilling components may include:	• drill rods • drill bits • reamers • survey tools • down-hole motors
Relevant personnel may include:	• drill crew members • mine staff and supervisors • site safety personnel • statutory persons
Ancillary equipment may include:	• pumps • water disposal lines • ventilation equipment
Remedial action may include:	• clearing or remove obstructions • replacing damaged hoses • topping-up lubricants

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB211A Assist mud rotary drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers assisting with mud rotary drilling in resources and infrastructure industries. It includes planning, preparing for and assisting with the drilling process, handling samples, mixing drilling fluids, carrying out basic maintenance of tools and equipment.

Application of the Unit

Rotary mud drilling is used for environmental, geotechnical, mineral exploration and waterwell drilling. This unit is appropriate for those working in driller's assistant roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for assisting with mud rotary drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Load, unload, move, handle, use and store rotary drilling equipment and all associated tools, sampling devices and connecting equipment 1.6. Set up and stabilise pipe racks 1.7. Wear all necessary ***personal protective equipment*** and protective clothing when assisting with rotary mud drilling
2. Support the rotary mud drilling process	2.1. Fit and remove bits, reamers and stabilizers to and from the drill string 2.2. Prepare drill string in readiness for tripping and drilling 2.3. Add and remove drill pipe and collars from the drill string 2.4. Inspect drill pipe, collars, bits, threads and associated equipment for damage 2.5. Observe housekeeping and site safety measures while supporting rotary mud drilling operations 2.6. Use ***pipe and casing handling equipment*** according to required procedures
3. Handle samples	3.1. Take necessary safety precautions when handling potentially hazardous ***samples*** 3.2. Obtain and/or lay out disturbed samples in accordance with workplace, drilling sector or site procedures 3.3. Bag, properly ***label*** and store samples for transport according to requirements 3.4. Clean and service sampling tools 3.5. Store undisturbed samples for transport in accordance with standard procedures

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4. Mix drilling fluids	4.1. Wear appropriate protective clothing 4.2. Check labels and read and interpret safety information, hazard codes and materials safety data sheets (MSDS) 4.3. Apply correct mixing procedure for the ***drilling fluid*** 4.4. Carry out storage of drilling mud components and additives safely and according recommendations 4.5. Perform ***basic tests*** on the fluid and ***record*** and report the results
5. Carry out basic maintenance of tools and equipment	5.1. Perform inspections and routine checks on ancillary equipment such as mud pumps, water delivery pumps and mud hoppers 5.2. Perform inspections and basic maintenance pipe handling equipment 5.3. Observe occupational health and safety procedures in carrying out equipment maintenance

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assist with mud rotary drilling:

- apply legislative, organisation and site requirements and procedures
- apply procedures for operation of ancillary equipment such as mud pumps, water supply pumps mud hoppers and solids control equipment
- apply basic maintenance procedures for mud and/or water delivery pumps

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assist with mud rotary drilling:

- reasons for identification and care of samples including storage and transport
- occupational health, safety and environment issues
- use of safety data sheets (SDS)
- types of mud pumps and their applications

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with mud rotary drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient assisting with mud rotary drilling • working with others to undertake and complete the mud rotary drilling tasks that meets all of the required outcomes • consistent timely completion of assisting with mud rotary drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the mud rotary drilling tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazard may include:	• release of gases from formation or samples obtained • spread of contaminants as a result of drilling or cleaning processes • change in the chemistry of contaminants as a result of drilling and recovery of the core

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	samples • working in proximity to drilling rig • entanglement in rotating pipes • string makeup and breakout hazards • hazards with the use of grout mixers, pumps
Coordination requirements may include:	• drill team members • other equipment operators • maintenance personnel • supervisors • worksite personnel
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Pipe and casing handling equipment may include:	• foot clamps (hydraulic or manual) • stilsons • break-out wrench • lifting plugs • C Spanner • clam shell
Samples may include:	• disturbed/undisturbed samples • sludge samples
Label information may include:	• Project number • Bore number • Depth interval • Sample description • Sampling method
Drilling fluids and additives may include:	• polymers • bentonite • water/oil • soluble oil • lost circulation material • aerated mud
Basic tests on drilling fluid may include:	• viscosity • mud weight • sand content • pH • salinity • filter press

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Record keeping documents may include:	• note book • plastic bags (write on) • undisturbed tubes • bore logs

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB213A Assist cable tool drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers assisting with cable tool drilling in the drilling industry. It includes planning and preparing for assisting with cable tool drilling, supporting the core drilling process, handling samples, and mixing drilling fluids. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for cable tool drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Load, unload, move, handle, follow workplace procedures for the use and storage of drilling equipment and all associated tools, sampling devices and connecting equipment 1.6. Take necessary safety precautions when handling potentially contaminated samples 1.7. Wear all necessary personal protective equipment and protective clothing when assisting with cable tool drilling
2. Support the core drilling process	2.1. Fit/remove and ***measure*** correct bits to/from the tool string 2.2. Lay out ***tools and equipment*** in readiness for drilling 2.3. Inspect tool string components regularly and replace worn/damaged components under the direction of the driller 2.4. Observe housekeeping and site safety measures while supporting cable tool drilling operations 2.5. Use rod/***casing handling equipment*** according to manufacturer's recommendations and the organisation's procedures
3. Handle samples	3.1. Remove ***samples*** from barrels as required 3.2. Take precautions to ensure no surface contamination of samples 3.3. Carry out collection of sludge samples as required
4. Mix drilling fluids	4.1. Wear appropriate protective clothing 4.2. Check labels and read and interpret safety

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	information/ hazard codes 4.3. Apply correct mixing procedure for the ***drilling fluid*** 4.4. Carry out storage of drilling mud components and additives safely and according to manufacturer's and organisation's recommendations 4.5. Perform basic ***tests on the fluid*** and ***record***/***report*** the results as required

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to assist with cable tool drilling:

- apply legislative, organisation and site requirements and procedures for assisting with cable tool drilling
- identification of thread types in use on site
- identification of bits in use and how to measure them
- use of various rod handling equipment on site
- refuelling operations on vehicles, drill rigs and ancillary equipment
- identification of correct lubricants
- correct handling of samples
- good housekeeping principals
- identification and mixing of drill fluids
- identification of bits to suit differing ground conditions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to assist with cable tool drilling:

- reasons for identification and care of samples including storage and transport
- occupational health, safety and environment issues at AQF level 2 in the non-hydrocarbon drilling industry
- cable tool drilling equipment, components and nomenclature
- basic knowledge of bit types and their applications to different geological conditions

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with cable tool drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient assisting with cable tool drilling • working with others to assist with cable tool drilling that meets all of the required outcomes • consistent timely assistance with cable tool drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to assist with cable tool drilling

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• carrying out pre-start checks • fuelling vehicles, drill rigs and ancillary plant • lubricating plant and equipment as required • setting up ancillary plant under the direction of the driller • assisting in the make up/break out of tools • servicing down hole tools, including dressing bits • keeping collar of hole clear • constructing and maintaining drains, bunds and water collection areas • collecting and bag samples • driving truck and cart water as required • keeping all equipment clean and stored correctly • following good house keeping • washing vehicles and keeping them clean inside and out • travelling to town to obtain supplies as required
Hazards may include:	• working in proximity to drilling rig • release of gases from formation or samples obtained • spread of contaminants as a result of drilling or cleaning processes • change in the chemistry of contaminants as a result of drilling and recovery of the core

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	samples • working in proximity to drilling rig • entanglement in drill or bailing lines • string makeup and breakout hazards • hazards with the use of grout mixers, pumps
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Measure may include:	• bit diameters • clay/sand barrel diameters and lengths

Tools and equipment may include:	• AWW casing
	• slimline casing
	• API tool threads
	• goldfields tool threads
	• southern cross tool threads
	• appropriate bits, shoes, clamps, casing, tools and lifting devices including:
	  • spudding bits
	  • undercutting bits
	  • star bits
	  • chisel bits
	  • jars
	  • drive clamps
	  • casing lift/drive caps
	• make and break equipment including:
	  • stilsons
	  • hydraulic tong and pipe wrenches
	  • break-out wrench

Casing type may include:	• steel casing • PVC casing • Casing sealants may include: • urethane foam • cement • gypset
Handling equipment may include:	• tool spanners • tool wrenches • slings • chain tongs • casing clamps

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	• casing jacks
Samples may include:	• samples from sand/clay barrels • sludge samples from the bailer
Drilling fluids and additives may include:	• water • bentonite • polymer • barite • lost circulation material
Tests on the fluid may include:	• viscosity • mud weight • use of marsh funnel and cup
Record/report documents may include:	• note book • plastic bags (write on) • hole logs

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB216A Assist underground in-seam directional drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers assisting with underground in-seam directional drilling in underground coal mines. It includes planning and preparing for assisting with drilling, supporting the drilling process and carrying out basic maintenance of tools and equipment.

Application of the Unit

Underground in-seam directional drilling is conducted for gas extraction and water drainage, barrier proving and exploration in underground coal mining operations. This unit is appropriate for those working in drillers assistant roles, at worksites within:

- Coal mining
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for assisting with drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify, manage and report all potential ***hazards*** 1.3. Obtain, confirm and apply ***work instructions*** for the allocated task 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Load, unload, move, handle directional drilling equipment and all associated tools and connecting
2. Support the drilling process	2.1. Position and number drill rods in readiness for drilling 2.2. Inspect ***in-hole drilling components*** for damage 2.3. Fit and remove in-hole drilling componants to and from the drill string as instructed 2.4. Apply housekeeping 2.5. Maintain communication with all ***relevant personnel*** 2.6. Identify unplanned gas and water leakage and other environmental hazards
3. Carry out basic maintenance of tools and equipment	3.1. Monitor the drill rods for wear and damage and dress and grease threads 3.2. Rotate rods in stack 3.3. Monitor all drill equipment and hoses and ***ancillary equipment*** and carryout ***remedial action*** 3.4. Apply environmental controls 3.5. Ensure that drill fluids are appropriately contained and disposed of appropriately

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assist with underground in-seam directional drilling:

- apply legislative, organisation, site and manufacturer's requirements and procedures
- apply safe manual handling practices
- operate ancillary equipment including:
  - pumps
  - ventilation equipment and
  - personal protective equipment
- apply communication procedures
- apply inspection and monitoring procedures
- apply maintenance procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assist with underground in-seam directional drilling:

- legislative, organisation's and site OHS requirements
- potential underground drilling, underground work environment hazards and underground environmental hazards
- organisation's and manufacturer's operational requirements and procedures
- equipment handling requirements
- housekeeping requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with underground in-seam directional drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient assisting with underground in-seam directional drilling • working with others to undertake and complete underground in-seam directional drilling that meets all of the required outcomes • consistent timely assisting with underground in-seam directional drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete underground in-seam directional drilling tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazards may include:	• handling, loading, moving, using and storing underground directional drilling equipment • working in proximity to drilling rig • inadequate communication with drill crew • entanglement in rotating equipment • inhalation or ignition of noxious or flammable gases • vehicles • mining equipment • roof and rib spalls • the presence of gases and water

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects

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	• hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • mine personnel
In hole drilling components may include:	• drill rods • drill bits • reamers • survey tools • down-hole motors
Relevant personnel may include:	• drill crew members • mine staff and supervisors • site safety personnel • statutory persons
Ancillary equipment may include:	• pumps • water disposal lines and • ventilation equipment
Remedial action may include:	• clear or remove obstructions • replace damaged hoses • top-up lubricants

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB217A Assist horizontal direction drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the assist horizontal directional drilling in resources and infrastructure industries. It includes: planning and preparing for operations; support the horizontal directional drilling process; mixing drilling fluids; and carrying out basic maintenance of tools and equipment.

Application of the Unit

This unit covers horizontal directional drilling such as might be undertaken for long holes or holes under rivers, lagoons etc, or large diameter bores in hard rock or other difficult geology. The directionally drilled hole may subsequently be reamed and have product pipe installed. This unit is appropriate for those working in drillers assistant roles, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for horizontal directional drilling operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to horizontal directional drilling 1.2. Obtain, confirm and apply ***work instructions*** for the allocated horizontal directional drilling task 1.3. Identify, manage and report all potential ***hazards*** associated with handling, loading, moving, using and storing horizontal directional drilling equipment 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during horizontal directional drilling work activities 1.5. Apply workplace procedures when loading, unloading, moving and ***handling equipment*** and all associated tools and connecting equipment 1.6. Take necessary safety precautions when handling potentially contaminated spoil 1.7. Wear all necessary ***personal protective equipment*** and protective clothing 1.8. Assist in the use of locating equipment for locating ***underground utilities***
2. Support the horizontal directional drilling process	2.1. Fit/remove bits/reamers/stabilizers to/from the drill string 2.2. Lay out drill string in readiness for tripping/drilling 2.3. Add/remove drill pipe from the drill string 2.4. Inspect drill pipe, bits, threads and associated equipment for damage 2.5. Observe housekeeping and site safety measures while supporting horizontal directional drilling operations 2.6. Assist in the use of guidance or tracking equipment
3. Mix drilling fluids	3.1. Wear appropriate protective clothing 3.2. Check labels and read and interpret safety information/hazard codes 3.3. Apply correct mixing procedure for the

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	drilling fluid 3.4. Carry out storage of drilling mud components and ***additives*** safely and according to manufacturer's recommendations 3.5. Perform ***basic tests*** on the fluid and record/report the results as required
4. Carry out basic maintenance of tools and equipment	4.1. Perform inspections and routine checks on ancillary equipment such as mud pumps, water delivery pumps and mud hoppers 4.2. Perform inspections and basic maintenance pipe handling equipment 4.3. Observe occupational health and safety procedures in carrying out equipment maintenance

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assist horizontal directional drilling:

- apply legislative, organisation and site requirements and procedures
- apply techniques for operation of ancillary equipment such as:
  - mud pumps
  - water supply pumps and
  - mud hoppers

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assist horizontal directional drilling:

- occupational health and safety requirements and procedures
- environmental issues, requirements and procedures
- materials safety data sheets (MSDS)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with horizontal directional drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of assisting with horizontal directional drilling • working with others to undertake and complete horizontal directional drilling that meets all of the required outcomes • consistent timely completion of assisting with horizontal directional drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete horizontal directional drilling

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• drilling into underground utilities • drilling into asbestos materials either natural or old utilities • release of gases from formation or spoil • spread of contaminants as a result of drilling or cleaning processes • change in the chemistry of contaminants as a result of drilling and recovery of spoil • working in proximity to drilling rig • traffic when working in built up areas

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	• entanglement in rotating pipes • string makeup and breakout hazards
Coordination requirements may include:	• driller operators • maintenance personnel • supervisors • worksite personnel
Pipe/casinghandling equipment may include:	• rod clamps (hydraulic) • stilsons • rod carousel • rod box • hydraulic rod handler • rod carousel • break-out wrench • lifting plugs
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Underground utilities may include:	• electrical power lines (overhead or buried) • gas pipes • water pipes • waste pipes (including stormwater, trade waste and sewerage) • telephone cables
Drilling fluids andadditives may include:	• Polymers • Bentonite • Water/oil • Soluble oil • Lost circulation material
Basic drilling **fluid tests** may include:	• Viscosity • Mud weight • pH

Unit Sector(s)

Drilling (General)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB218A Assist grouting or cementing operations

Modification History

Not applicable.

Unit Descriptor

This unit covers assisting with grouting or cementing operations in drilling industry. It includes: planning and preparing for the process; operating ancillary equipment; performing basic measurement and calculations; grouting and cementing holes; and cleaning all equipment at completion of grouting or cementing.

Application of the Unit

This unit is appropriate for those working in drillers assistant roles, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for supporting the grouting or cementing process	1.1. Access, interpret and apply ***compliance documentation*** relevant to assist grouting or cementing operations 1.2. Obtain, confirm and apply ***work instructions*** for the grouting or cementing operations 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during the grouting or cementing process 1.5. Obtain and use appropriate ***personal protective equipment*** for grouting or cementing operations as listed in the work instructions or materials safety data sheets (MSDS)
2. Operate ancillary equipment	2.1. Start-up, run, and close down ***ancillary equipment*** such as grout pumps and mixers
3. Perform basic measurement and calculations	3.1. Read tape measure accurately to carry out simple measurements of tank capacities, casing or rod lengths as required 3.2. Record or complete tally sheets for number of lengths of casing placed in the hole as required 3.3. Carry out simple ***calculations and measurements*** 3.4. Record legibly on all reports
4. Grout and cement hole	4.1. Mix grout and any additives 4.2. Follow materials safety data sheets (MSDS) requirements for all materials used 4.3. Grout or cement hole using appropriate equipment and techniques 4.4. Place grout using appropriate techniques 4.5. Construct well head, hole identification and install hole security devices if required 4.6. Dispose of any excess grout or cement according to site waste management procedures
5. Clean all equipment at completion of grouting or	5.1. Avoid spillage of grout, cement or additives to minimise any associated safety

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cementing	hazards 5.2. Use cleaning equipment for cleaning safely and effectively 5.3. Apply approved instructions and occupational health and safety requirements on the use of hazardous chemicals for cleaning 5.4. Ensure that all ***cleaning equipment*** is kept in good working condition

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.
Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assist grouting or cementing operations: • apply legislative, organisation and site requirements and procedures • operate cleaning equipment • apply communication procedures • use mixing equipment • measure tank dimensions and calculate volumes • record casing lengths and quantities accurately
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assist grouting or cementing operations: • site and equipment safety requirements • possible effects of grout, cement or cement additives on health • environmental requirements and procedures • team roles and objectives during the grouting or cementing operations • properties of grout, cement or cement additives • safe work procedure for the grouting or cementing process

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with grouting or cementing operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of assisting with grouting or cementing operations • working with others to undertake and complete grouting or cementing operations that meet all of the required outcomes • consistent timely completion of assisting with grouting or cementing operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete grouting or cementing operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• spread of contaminants as a result of the grouting or cementing process or cleaning processes • working in proximity to drilling rig • string makeup and breakout hazards • hazardous chemicals
Coordination requirements may	• driller

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include:	• other driller's assistants • other equipment operators • supervisors • mine or client personnel
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Ancillary equipment may include:	• lighting generators • pumps • hand tools • grout mixing • drill fluid (mud) mixing equipment
Calculations and measurements may include:	• diameters casing, hole • casing volumes • casing quantities and length • hole volumes • tank volumes • annular volumes • component volumes for grouting
Cleaning equipment may include:	• pressure cleaning • chemical cleaning • manual cleaning • abrasive mechanical cleaning

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB301A Set up and prepare for drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the setting up and preparing for drilling operations in resources and infrastructure industries. It includes planning for setting up and preparing for drilling operations; locating the rig at hole position; setting up drill and equipment; and diagnosing problems.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for drilling operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Determine location and nature of any installed services near or crossing the proposed drill plan 1.6. Obtain all necessary permits or consents, where required 1.7. Develop ***contingency plans*** for changes in geological conditions
2. Prepare to drill	2.1. Check all required personnel, equipment and supplies are available 2.2. Select and wear required ***personal protective equipment*** 2.3. Check equipment is in good operational condition 2.4. Walk and inspect the drill site, noting any services, hazards, obstacles or other items relevant to the job 2.5. Identify any services by inspection and from preliminary investigation and confirm exact location 2.6. Erect or place safety barriers where needed 2.7. Check all modes of communication 2.8. Select suitable lay down areas for separate storage of chemicals and fuels or other incompatible items 2.9. Select locations for ancillary equipment to provide maximum efficiency and minimal risk to personnel
3. Set up drill and equipment	3.1. Ensure a solid foundation for the rig 3.2. Interpret plans and position equipment accurately 3.3. Stabilise drill

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	3.4. Align and secure mast at correct angle 3.5. Position ancillary equipment accurately
4. Diagnose problems	4.1. Recognise symptoms of problem 4.2. Identify and isolate causes and determine solution 4.3. Implement solution if within scope of authority and competence 4.4. Seek help if problem is too complex 4.5. Implement solution as directed

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to set up and prepare for drilling operations:

- apply legislative, organisation and site requirements and procedures
- operate machine
- operate ancillary equipment
- interpret graphical representation, including maps, diagrams
- apply metric and imperial conversions
- apply mathematical skills, including:
  - addition
  - subtraction
  - multiplication
  - division
- apply appropriate instruments to measure:
  - volume
  - quantities
  - mass
  - weight
  - length
- using calculator
- apply estimating skills, e.g. mental arithmetic, visualisation of size and quantity
- apply basic geometry to interpret depth, direction and azimuth of a hole

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to set up and prepare for drilling operations:

- equipment and its characteristics, technical capabilities and limitations
- operational and maintenance procedures, including:
  - controlling flow off site
  - disposing of waste
  - no excess clearing
  - prevention of spread of contaminants
- soil sampling and basic geological knowledge, including classification of rocks,

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drillability and stability

- environmental requirements and procedures
- fault finding and troubleshooting techniques
- team work
- communication systems, processes and procedures, e.g. 2-way radio

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for setting up and preparing for drilling operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the setting up and preparing for drilling operations • working with others to undertake and complete the setting up and preparing for drilling operations that meets all of the required outcomes • consistent timely completion of the setting up and preparing for drilling operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the setting up and preparing for drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks, including hole parameters, e.g. size and depth
	  • permits required, e.g. dispose of waste
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• obstacles • underground services • overhead power lines • uneven ground

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	• unconsolidated ground
Coordination requirements may include:	• drill team members • other equipment operators • maintenance personnel • supervisors • mine personnel
Contingency plans may concern changes in:	• geological conditions • depths • materials used in construction
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB302A Conduct reaming

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of reaming in the drilling industry. It includes planning and preparing for reaming, completing back reaming/reaming, maintaining equipment, and responding to problems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for reaming	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Raise alarm/report as required according to site procedures
2. Complete back reaming/ reaming	2.1. Select appropriate reaming tool(s) 2.2. Lock out machine 2.3. Remove drill head 2.4. Connect appropriate ***reamer*** 2.5. Check all safety precautions are in place and restart machine 2.6. Reaming/back ream, adding/removing drill stem sections to procedure as required 2.7. Monitor and interpret all gauge/dial readings 2.8. Monitor and interpret drill ***fluid*** flow from both ends of hole 2.9. Maintain communication with all relevant personnel 2.10. Maintain drill log and reports as required
3. Maintain equipment	3.1. Monitor wear on drill stem, particularly threads 3.2. Dress damaged threads or replace drill stem as required 3.3. Check all equipment and hoses 3.4. Monitor wear on reamers and take required action 3.5. Clean all equipment on completion of reaming, ensuring environmental controls are followed 3.6. Rotate drill stems in stack 3.7. Ensure drill fluid is appropriately

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	contained/disposed of 3.8. Keep site safe for all possible users for the total duration of the job 3.9. Leave site in a safe and tidy condition which complies with all relevant regulations
4. Respond to problems	4.1. Identify possible ***problems*** in equipment or process. 4.2. Determine problems needing action 4.3. Determine possible fault causes 4.4. Rectify problem using appropriate solution within area of responsibility 4.5. Follow through items initiated until final resolution has occurred 4.6. Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct reaming:

- apply legislative, organisation and site requirements and procedures for conducting reaming
- interpret reaming data and determining an appropriate course of action
- operate machine
- operate ancillary equipment such as communications equipment, and fluid mixers
- attach reamer
- check threads with thread gauge and dress slightly damaged drill stem threads
- lubricate threads and other components
- clean equipment and check for wear and damage
- disassemble, clean, inspect and reassemble reaming heads

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct reaming:

- basic rock/geology types and their impact on HDD operations, including hard rock and scree
- appropriate reamers for different geology types
- principles of HDD
- types of drill fluid, their uses and make up/adjustment procedures
- relevant State regulations/codes such as NSW WorkCover code of practice for excavation and similar requirements in other states

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting reaming • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of reaming • working with others to undertake and complete the conduct of reaming that meets all of the required outcomes • consistent timely completion of reaming that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of reaming

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• use of typical personal protective equipment including:
	  • electrically insulating boots and gloves
	  • eye and hearing protection
	  • equipment for confined space entry
	  • general protective clothing
	• nature and scope of tasks
	• specifications
	• quality of finished works
	• achieved targets
	• operational conditions
	• obtaining of required permits
	• site layout
	• out of bounds areas
	• worksite inspection requirements
	• lighting conditions
	• plant of equipment defects
	• coordination requirements or issues
	• contamination control requirements
	• environmental control requirements
	• barricade and signage requirements

Hazards may include:	• electrical strike • working in proximity to drilling rig
Coordination requirements may include:	• other equipment operators • maintenance personnel

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	• supervisors • site personnel
Reamer may include:	• 'off the shelf' or custom designed by/for the drilling company
Fluid may include:	• bentonite clay • polymer • PH adjusting agents such as soda ash

Problems may include:	• buried utilities in path of bore including:
	  • electrical power lines (overhead or buried)
	  • gas pipes
	  • water pipes
	  • waste pipes (including stormwater, trade waste and sewerage)
	• changing geological formations, particularly cobble, rock or unstable/porous formation, faults
	• unreliable communications with crew
	• problem with selection of best reamer for the job

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB303A Install product pipe

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of product pipe in the drilling industry. It includes planning and preparing for installing product pipe, installing product pipe, maintaining equipment, and responding to problems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for installation of product pipe	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Raise alarm/report as required according to site procedures
2. Install product pipe	2.1. Select appropriate equipment to install product 2.2. Lock out machine 2.3. Check and connect necessary equipment 2.4. Locate product feed to prevent damage and within breakover limitations 2.5. Check all safety precautions are in place and restart machine 2.6. Install product, removing drill stem sections to procedure as required 2.7. Monitor and interpret all gauge/dial readings 2.8. Monitor product feed 2.9. Maintain communication with all relevant personnel 2.10. Take required actions to achieve satisfactory product installation as required 2.11. Maintain drill log and reports as required
3. Maintain equipment	3.1. Monitor wear on drill stem, particularly threads 3.2. Dress damaged threads or replace drill stem as required 3.3. Check all equipment and hoses 3.4. Clean all equipment on completion of installation, ensuring environmental controls are followed 3.5. Rotate drill stems in stack

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	3.6. Keep site safe for all possible users for the total duration of the job 3.7. Leave site in a safe and tidy condition which complies with all relevant regulations
4. Respond to problems	4.1. Identify possible ***problems*** in equipment or process 4.2. Determine problems needing action 4.3. Determine possible fault causes 4.4. Rectify problem using appropriate solution within area of responsibility 4.5. Follow through items initiated until final resolution has occurred 4.6. Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install product pipe:

- apply legislative, organisation and site requirements and procedures for installation of product pipe
- operate machine
- operate ancillary equipment such as communications equipment
- attach product
- dress slightly damages drill stem threads

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install product pipe:

- basic rock/geology types and their impact on HDD operations including hard rock and scree
- minimum radius of curvature for different products and impact on the job
- strengths (compressive, tension) for different products and impact on the job
- principles of HDD (general only)
- relevant state regulations/codes such as NSW WorkCover Code of Practice for Excavation and similar requirements in other states

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installation of product pipe • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installation of product pipe • working with others to undertake and complete the installation of product pipe that meets all of the required outcomes • consistent timely completion of installation of product pipe that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of product pipe

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• maintenance tasks including:
	  • checking threads with thread gauge
	  • dressing threads
	  • lubricating threads and other components
	  • cleaning all equipment and checking for wear and damage
	  • disassembling, cleaning, inspecting and reassembling installation equipment
	• using personal protective equipment including:
	  • electrically insulating boots and gloves
	  • eye and hearing protection
	  • equipment for confined space entry
	  • general protective clothing
	• nature and scope of tasks
	• specifications
	• quality of finished works
	• achieved targets
	• operational conditions
	• obtaining of required permits
	• site layout
	• out of bounds areas
	• worksite inspection requirements
	• lighting conditions
	• plant of equipment defects
	• coordination requirements or issues

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	• contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel

Problems may include:	• changing geological formations, particularly cobble, rock or unstable/porous formation, faults
	• unreliable communications with crew
	• problems with selection of best installation method and equipment for the job
	• over bending/stressing of the product pipe
	• handling of different product types such as:
	  • welded steel pipe
	  • polythene pipe (low/high density)
	  • polypropylene pipe
	  • PVC pipe
	  • plastic drainage (perforated) pipe

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB304B Conduct air drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of air drilling in resources and infrastructure industries. It includes planning and preparing for conduct of air drilling; inspecting and maintaining air drilling equipment; drilling; selecting and using drilling additives; taking samples; maintaining equipment; and responding to problems.

Application of the Unit

Air drilling is used for environmental, geotechnical, mineral exploration, mineral production, blast hole, seismic and water well drilling. Air drilling methods may include: rotary air blast, aircore, down the hole hammer, open hole, reverse circulation or combinations of the above. This unit is appropriate for those working in driller roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare to conduct air drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Inspect and maintain air drilling equipment	2.1. Ensure ***restraining devices*** are not damaged or worn and are correctly fitted 2.2. Fit or replace restraining devices in accordance with procedures 2.3. Inspect and maintain the cyclone in ***safe and serviceable condition*** 2.4. Ensure mounting and security of cyclone is adequate for safe operation, particularly when down hole water may result in release of energy 2.5. Maintain dust suppression systems to ensure minimal emission of airborne dust and integrity of sample quality 2.6. Inspect pressure relief valves to ensure they have not been tampered with
3. Drill using air drilling methods	3.1. Select and use appropriate drill rod and drill string components given hole specification and anticipated ground conditions 3.2. Operate ***make-up and break-out equipment*** 3.3. Select and use appropriate type and size of ***in-hole*** tools given hole specification and anticipated ground conditions 3.4. Drill/open-up hole collar as required to suit given ground conditions and hole specification 3.5. Install ***drill hole collar casing*** and seal at the hole collar 3.6. Install ***outside hole return collar device***, if required, given hole specification of open

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	or reverse circulation drill hole 3.7. Operate and/or supervise the safe operation of ***drill rod and pipe handling equipment*** 3.8. Add and remove drill rods or casing and other in-hole equipment 3.9. Monitor and adjust air pressure and other ***drilling parameters*** to achieve maximum performance 3.10. Monitor and control down hole water conditions to ensure integrity of the hole, drill cuttings and sample quality 3.11. Monitor and safely control discharge from outside hole return collar device as required 3.12. Calculate depth of hole
4. Select and use drilling additives	4.1. Identify ground conditions requiring the use of ***drilling additives*** 4.2. Select appropriate drilling additives to suit ground conditions 4.3. Prepare and/or supervise the preparation of required drilling additives 4.4. Use drilling additives to achieve required results
5. Take samples	5.1. Select and check sample devices to ensure client sample quantity and quality specifications are met 5.2. Clean or supervise the cleaning of sample devices 5.3. Monitor splitting, bagging, presentation, and marking of samples to ensure client specifications are met 5.4. Identify and promptly rectify sample blockages affecting or having the potential to affect sample quality 5.5. Clear sample delivery hose blockages safely 5.6. Clear outside return hole blockages of collared holes as required 5.7. Supervise drill crew to ensure all sampling tasks are carried out correctly and safely
6. Maintain equipment	6.1. Supervise the use of specified ***personal protective equipment*** when using grinders or bit sharpening equipment

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	6.2. Supervise the selection and correct fitting grinding disks, wheels and stones in accordance with site specifications 6.3. Monitor wear of in-hole tools 6.4. Check, maintain, and/or replace compressed air hoses and hose fittings or clamps 6.5. Supervise the correct sharpening and maintenance of in-hole tools 6.6. Inspect, dismantle, replace worn or damaged components and reassemble in-hole equipment
7. Respond to problems	7.1. Monitor drill cuttings or sample quality, quantity and air return 7.2. Identify possible problems in equipment or process 7.3. Determine possible cause(s) of problems 7.4. Rectify problem(s) using appropriate solution within area of responsibility 7.5. Follow through items initiated until final resolution has occurred 7.6. Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct air drilling:

- apply legislative, organisation and site requirements and procedures
- apply prescribed thread form torque parameters during make-up of down hole equipment and consumables
- apply correct internal and external callipers, vernier, rule and or tape measure for identification of drill pipe/rod diameter wear limits, measurement of bits/shrouds and other down hole equipment
- apply correct measurement of drill string length
- apply methods for calculating hole depth

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct air drilling:

- the importance to match like threads with like threads on all threaded components and make up torque requirements applicable to thread form in use
- the relationship between pressure, volume, hole diameter, pipe diameter and calculation of up hole velocity
- drill pipe and rod and thread form wear limit parameters
- the need for correct hole collaring, use of casing and collar sealing techniques
- TC bit sharpening procedures
- potential problems related to inaccurate measurement and usage sequence of ground engaging consumables and related down hole components
- hazard control measures to enable safe use of compressed air
- the importance of monitoring sample quantity
- the role that drill cuttings blockages play in affecting sample quality
- safe procedures to clear down and up hole drill cuttings blockages within the outside hole return, down hole equipment and up hole sample system and/or hose
- the critical need for correct fitting inspection and maintenance replacement of restraining devices
- the hazards associated with the collection of high velocity drilling cuttings
- the reason for checking inner tubes and inner tube sealing devices in RC drill pipe
- hazards associated with wire-line operations and applicable control measures
- identification of various thread forms used in air drilling
- identification of various in-hole tools and correct application given ground conditions

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- the need for uncontaminated samples

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting air drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of air drilling • working with others to undertake and complete air drilling tasks that meets all of the required outcomes • consistent timely completion of air drilling tasks that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete air drilling tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• lack of preventative maintenance causing rupture of air delivery and sample delivery hoses • damaged/worn clean air and sample hoses • inadequate airborne dust prevention control measures

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	• incorrect match of hose size to hose tails/clamps and fittings • incorrect fitting of clean air or sample hoses • high abrasive wear rates to drill cutting receival equipment • incorrectly fitted hose restraint devices • incorrect hose restraints in use • incorrect or inadequately secured cyclones and cyclone lids • incorrectly fitted grinding wheels, stones and disks • inappropriate methods/procedures for clearing sample hose blockages • insecure sample deflection devices fitted to the drill head • incorrect fitting of wire to wire-line winch drum • wireline snags and overruns • lack of provision of restraint devices to clean air, sample hoses and drill head sample deflection devices • incorrectly fitted stuffing boxes and T pieces • excessive drill pipe and drill string component wear • unguarded or uncontrolled access to pinch points, i.e. hydraulic make-up and break-out devices • poor triangulation configuration of rod/pipe hoisting equipment for angle of hole • excessive wear to hook and clamshell assemblies • lack of provision of handling equipment for movement of sample bags and heavy up and down hole equipment • poor ergonomic equipment design for tasks such as sample splitting, bagging and movement • inappropriate storage/racking of drill pipe • incorrect use of stilsons • incorrect mixing procedure and application of urethane forms • inadequate security of outside hole collar devices • drill cuttings blockages (down and up hole)

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Coordination requirements may include:	• drill team • other equipment operators • maintenance personnel • supervisors • worksite personnel
Restraining devices shall include:	• two leg stocking type whipchecks • correctly rated shackles • correctly rated and fitted whipcheck anchor points
Restraining devices may also include:	• wire rope sling type whipchecks • internal hose wire type whipchecks • hose restraint brackets and clamps
Safe and serviceable condition will be:	• free from excessive leaks and excessive wear to internal wear resistant materials • chimney correctly positioned in the cyclone vortex zone to best eliminate dust emission
Make up and break out equipment may include:	• stilsons • hydraulic pipe tongs • hydraulic pipe wrenches • hydraulic pipe/rod spinners • hydraulic make/break devices • make up torque requirements • bit break out plates

In-hole equipment may include:	• drill rods and drill pipe including:
	  • aircore rods with inner-tubes (may use IF or API threads)
	  • conventional drill pipe (API Reg or API IF threads)
	  • reverse circulation drill pipe (e.g. Remet, Metzke, Drillstar)
	  • drill pipe thread type subs, saver subs, blow up/down subs, dig-out subs and cross-overs (API and IF threads)
	  • floating/fixed inner tubes
	  • inner-tube sealing devices such as aircore inner tube ferrules or RC inner-tube 'O' rings
	• aircore trumpets and trumpet subs

Drill hole collar casing may include:	• steel casing • PVC casing • poly pipe (to maintain open blast hole collar)

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Outside hole return collar devices may include:	• stuffing boxes and T pieces for conventional open hole drilling, including RAB, hammer or combined RAB hammer • stuffing boxes and T pieces for reverse circulation drilling • discharge restraint devices as required • stuffing boxes and T pieces for discharge directed to sump or cyclone
Drill rod and pipe handling equipment may include:	• manual handling • hook and clamshell • hoist plug • automated and semi-automated rod handlers • hydraulic pipe/rod/casing clamps • hydraulic pipe/rod/casing spinner • drill rod/pipe clamps • rod/pipe spanner • slips • slips basket
Drill bits may include:	• blade bits • PCD bits • tri-cone bits • button bits (conventional and RC) • aircore bits
Drilling parameters may include:	• rotation speed • weight on bit • penetration rate
Drilling additives may include:	• drilling mud (e.g. polymers) • foams • cement and cement additives • hole collar sealants: • 2 part urethane foam, and/or • gypsum cement
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing

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Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB305A Conduct continuous flight auger drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of continuous flight auger drilling in resources and infrastructure industries. It includes planning and preparing for conducting continuous flight auger drilling; operating continuous flight auger drills; maintaining equipment; and respond to problems.

Application of the Unit

Flight auger drilling is used in environmental, foundation, geotechnical, minerals exploration, seismic and waterwell drilling. This unit is appropriate for those working in driller roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for conducting continuous flight auger drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Take steps to protect the environment and record any environmental incidents
2. Operate continuous flight auger drill	2.1. Collar borehole, start hole, maintain hole alignment, take corrective action for deflections 2.2. Make up appropriate drill string 2.3. Handle additional augers, inserting them in the drill string 2.4. Apply rotation, feed and holdback so that flights are substantially full for the soil being drilled at any given depth 2.5. Interpret flow from the flights and other factors to determine conditions at the bit 2.6. Describe and log, or record, description of the soils being excavated 2.7. Make, break auger string and drive head connections safely 2.8. Deploy and recover associated sampling equipment, obtain samples, bag, label and record samples 2.9. Maintain a clear hole and a clear bottom and deploy tools for cleaning hole bottom at completed depth and/or prior to sampling tool deployment 2.10. Interpret and/or calculate actual depth at any point during drilling, interpret depth of strata changes and identify fill depth in any bore 2.11. Select appropriate strategies for recovery of dropped augers 2.12. Recover drill string using winch and/or head/kelly and disassemble drill

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	string 2.13. Select bits for formation being drilled 2.14. Select appropriate augering method for situation 2.15. Maintain spoil removal from hole collar with appropriate safety protocols and constantly maintain safe working conditions 2.16. Abandon, cover and/or secure bores to ensure safety of others and crew 2.17. Communicate effectively with crew, clients and management 2.18. Prepare and submit paperwork for daily activities including bore logs where appropriate 2.19. Ensure appropriate ***personal protective equipment*** and work clothing for the task is worn
3. Maintain equipment	3.1. Monitor external wear in drill string, rotate string elements to ensure even wear 3.2. Interchange drill bits and/or drill bit elements to maintain free cutting ability 3.3. Check all string and ***equipment*** elements for wear and proper function 3.4. Replace worn elements in string, bits and equipment and recycle 'out of specification' equipment for repair or redundancy 3.5. Apply lubrication as appropriate 3.6. Maintain good housekeeping on site and for equipment in storage 3.7. Keep auger equipment clean
4. Respond to problems	4.1. Identify possible ***operational problems*** in equipment or process 4.2. Identify symptoms of problems needing remedial action 4.3. Determine possible fault causes 4.4. Rectify problem using appropriate solution within area of responsibility 4.5. Follow through items initiated until final resolution has occurred 4.6. Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct continuous flight auger drilling:

- apply legislative, organisation and site requirements and procedures for conducting of continuous flight auger drilling
- apply occupational health and safety requirement and procedures
- interpret geological maps, bore logs, diagrams, plans and instructions used for recording and prediction
- apply procedure to operate the rig carrier to position and move between holes
- apply rig stabilisation and levelling procedures
- identify components in various auger techniques and sizes
- apply equipment assembly, inspection and servicing procedures
- apply rig operating functions and controls with safety
- apply grout mixing techniques and placement methods
- apply test hole grouting and abandonment requirements and procedures
- apply water levels recording requirements
- use a calculator to calculate hole volume
- apply mechanical and manual handling safety procedures
- apply pressure cleaning devices procedures to decontaminate augers and equipment
- apply 'wireline' deployment and recovery techniques for sampling equipment
- apply, record and report on standard penetration test method
- apply deployment and recovery procedures of drilling and sampling systems using hollow augers as casing and recovery techniques for hollow auger inner rods and plug bits
- use tape measures
- apply conversion between metric and imperial units
- calculate using addition, subtraction, multiplication and division

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct continuous flight auger drilling:

- OHS responsibilities
- site hazards identification, assessment and control measures requirements and procedures
- environmental protection measures and aspects

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- equipment and spares identification and characteristics
- equipment technical capabilities, system limitations, gauge readings and their interpretation
- soil sampling techniques, deployment methods and record keeping
- operational maintenance procedures for rig and equipment including pre-start checks
- basic geological formations likely to be encountered and their properties
- use of water, mud and foam injection for jet auger drilling

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting of continuous flight auger drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of continuous flight auger drilling • working with others to undertake and complete the continuous flight auger drilling tasks that meets all of the required outcomes • consistent timely completion of continuous flight auger drilling tasks that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete continuous flight auger drilling tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Coordination requirements may include	• drill team • other equipment operators • maintenance personnel • supervisors • worksite personnel

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Hazards may include:	• release of gases from formation or samples obtained • spread of contaminants as a result of drilling or cleaning processes • change in the chemistry of contaminants as a result of drilling and recovery of the samples • working in proximity to drilling rig • use of high pressure air for drilling operations • entanglement in rotating pipes • string makeup and breakout hazards • drilling equipment and down-hole tools will depend on the air drilling method being used
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Equipment includes:	• solid flight augers including hex coupled augers, hex pins, D clips, screw taper thread (jet augers) and thread lube • hollow flight augers including overshot deployment of sampling tools, various manufacturer's tooling, taper screw threads and dog coupled reversible hollow augers, older hollow auger systems using parallel wall threads and plug bits deployed on inner rods • sampling systems including SPT hammers and split spoons • auger recovery tools, auger retaining plate, lifting sockets and hoisting plugs • O rings and flush hole plug spares for dog couples reversible hollow augers, circlip pliers
Operational problems may include:	• straighten holes and starting straight holes • encountering excessive water • sand blowback with hollow augers in wet unconsolidated formations • cork screwing effect when hold back not set properly • rotating too fast so that flights are not properly filled • cross contamination of samples when using solid flight augers • balancing bit cutting action with hole clearing action

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	• recovering samples in wet conditions • OHS issues relating to rotating plant including catching long hair, loose clothing, finger injuries, safety with lifting and carrying

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB306A Conduct large diameter auger drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of large diameter auger drilling in civil construction and drilling industries. It includes planning and preparing for drilling, operating the drill, maintaining equipment, and responding to problems.

Application of the Unit

Large flight augers include short-flight and bucket augers and are used for foundation construction drilling. This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for conducting of large diameter auger drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Induct site visitors as required by procedures
2. Operate large diameter auger drill	2.1. Collar borehole, start hole, maintain hole alignment, take corrective action for deflections 2.2. Make up appropriate drill string 2.3. Handle additional drill stems, inserting them in the drill string 2.4. Use appropriate gears, rotation, feed and holdback so that flights or bucket are substantially full for the soil being drilled at any given depth 2.5. Interpret drilling factors to determine conditions at the bit 2.6. Make and break auger string and drive head connections safely 2.7. Maintain a clear hole and a clear bottom and deploy tools for cleaning hole bottom at completed depth 2.8. Interpret or calculate actual depth at any point during drilling, interpret depth of strata changes and identify fill depth in any bore 2.9. Select appropriate strategies for recovery of dropped augers 2.10. Recover drill string using winch and/or head/kelly 2.11. Insert surface casing and deepen hole using smaller diameter auger or bucket, if required 2.12. Disassemble drill string and change

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	augers and bit components 2.13. Select bits for formation being drilled 2.14. Select appropriate augering method for situation 2.15. Maintain spoil removal from hole collar with appropriate safety protocols 2.16. Cover and secure bores to ensure safety of others and crew 2.17. Communicate effectively with crew, clients and management 2.18. Prepare and submit paperwork for daily activities 2.19. Ensure appropriate ***personal protective equipment*** and work clothing for the task is worn 2.20. Constantly maintain safe working conditions 2.21. Select and use water and drilling ***fluids*** as appropriate 2.22. Bell foundation piles, if required 2.23. Clean pile bases and insert reinforcement cages, if required 2.24. Deploy bucket augers through surface casing and when drilling under bentonite muds 2.25. Use spin off and side casting of spoil as appropriate 2.26. Record daily hole depths and progress
3. Maintain equipment	3.1. Monitor external wear in drill string, rotate string elements to ensure even wear 3.2. Interchange drill bits and/or drill bit elements to maintain free cutting ability 3.3. Check all string and equipment elements for wear and proper function 3.4. Replace worn elements in string, bits and equipment and recycle 'out of specification' ***equipment*** for repair or redundancy 3.5. Apply lubrication as appropriate 3.6. Maintain good housekeeping on site and for equipment in storage
4. Respond to problems	4.1. Identify possible ***operational problems*** in

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	equipment or process 4.2. Identify symptoms of problems needing remedial action 4.3. Determine possible fault causes 4.4. Rectify problem using appropriate solution within area of responsibility 4.5. Follow through items initiated until final resolution has occurred 4.6. Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct large diameter auger drilling:

- apply legislative, organisation and site requirements and procedures for the conducting of large diameter auger drilling
- apply occupational health and safety requirements and procedures
- apply techniques for rig carrier to positioning and movement between holes, and reaching several holes from the one set up position where turntable or boom deployment of rotary head is used
- apply rig stabilisation and levelling techniques
- identify components for various auger techniques and sizes
- apply equipment assembly, inspection and servicing procedures
- apply rig operating functions and controls with safety
- apply water levels recording procedures
- apply grout mixing techniques and placement application methods
- apply mechanical and manual handling safety requirements and procedures
- apply metric and imperial units conversion
- apply mathematical calculations using addition, subtraction, multiplication and division
- use a calculator to calculate hole volume

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct large diameter auger drilling:

- occupational health and safety responsibilities
- environmental protection measures and aspects
- basic geological formations expected and their properties
- equipment and spares identification and characteristics
- technical capabilities, system limitations, gauge readings and their interpretation
- site hazards identification, assessment and control measures requirements and procedures
- operational maintenance procedures for rig and equipment including pre-start checks
- use of diagrams, plans and instructions for positioning, recording work or progress
- use of tape measures and devices for assessing depth drilled

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- use of water, mud and foam injection for jet auger drilling and/or screw pipe drilling

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting of large diameter auger drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of large diameter auger drilling tasks • working with others to undertake and complete the large diameter auger drilling tasks that meets all of the required outcomes • consistent timely completion of large diameter auger drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete large diameter auger drilling tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards include:	• underground services and other hazards • overhead utilities (e.g. electricity)
Hazard management includes:	• appropriate personal protective equipment • following safe working practices
Coordination requirements may	• drill team

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include	• other equipment operators • maintenance personnel • supervisors • worksite personnel
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Fluids may include:	• water, mud foam used to assist cutting removal in screw pile or jet auger applications
Equipment may include:	• short flight augers with a range of spirals • jet augers and long screw pile augers • bucket augers • belling or under-reaming tools (pier hole) • auger recovery tools
Operational problems may include:	• straighten holes and starting straight holes • encountering excessive water • cork screwing effect when hold back not set properly • balancing bit cutting action with hole clearing action • occupational health and safety issues relating to rotating plant including catching long hair, loose clothing, finger injuries, safety with lifting and carrying • obstructions in hole • proximity to embankments

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB307B Conduct conventional core drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of conventional core drilling in resources and infrastructure industries. It includes planning and preparing for drilling, operating the drill and drill fluid system, using core orientation equipment, taking core samples, responding to problems, and maintaining equipment.

Application of the Unit

Core drilling may also be called diamond core drilling, diamond drilling or coring. It is used for environmental, geotechnical and mineral exploration drilling. This unit is appropriate for those working in operational roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for conducting conventional core drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply **work instructions** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Operate a core drill	2.1. Identify and use different ***drill rod*** or casing types, thread forms and thread make up parameters 2.2. Select appropriate ***drill bits*** and reamer shells 2.3. Adjust inner tube length to ensure appropriate ***fluid*** flow around the ***core*** 2.4. Use ***rod and casing handling equipment*** safely 2.5. Add and break out and remove drill rods and pipes and down hole equipment 2.6. Apply appropriate rotation speed, weight on the bit, drilling fluid flow rate and penetration rate applicable to the ground conditions 2.7. Measure drill string components and calculate depth of hole 2.8. ***Collar*** holes 2.9. Install casing and seal at the collar
3. Operate drill fluid system	3.1. Identify hole conditions requiring the use of drilling fluid additives 3.2. Select, prepare, apply, test and monitor suitable fluids and additives 3.3. Monitor fluid return and solids content and implement control measures 3.4. Monitor fluid and cuttings specific gravity and up hole velocity to ensure efficient hole clearing 3.5. Monitor causes of pressure in fluid systems 3.6. Select the appropriate fluid pumping rate for the hole size

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4. Use survey and core orientation equipment	4.1. Assemble, maintain and use ***survey and core orientation devices*** 4.2. Read and record survey data 4.3. Operate core orientation devices
5. Take core samples	5.1. Implement control measures for minimising core loss 5.2. Identify core blockages affecting ***sample*** quality
6. Respond to problems	6.1. Identify possible problems in equipment or process 6.2. Determine problems needing action 6.3. Determine possible fault causes 6.4. Rectify problem using appropriate solution within area of responsibility 6.5. Follow through items initiated until final resolution has occurred 6.6. Report problems outside area of responsibility to designated person
7. Maintain equipment	7.1. Use the required ***personal protective equipment*** and follow safe working procedures 7.2. Strip impregnated bits according to required procedures 7.3. Dismantle and service head assembly 7.4. Maintain drill string 7.5. Maintain bit management, record required information and store bits correctly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct conventional core drilling:

- apply legislative, organisation and site requirements and procedures
- apply routine checks and basic maintenance procedures for mud and water delivery pumps
- identify, mix and apply of collar sealants
- apply procedures for attachment of required equipment to collar casing
- apply basic drilling fluid tests such as viscosity and specific gravity
- apply procedures to ensure that core is handled correctly and placed in core trays as required
- apply techniques for measuring bits and other related components

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct conventional core drilling:

- configuration of various thread forms and make up torque requirements
- the function of hole collaring, use of casing and collar sealing techniques
- methods required to produce uncontaminated samples
- impregnated bit stripping procedures
- bit selection for different types of drilling and different ground conditions
- the relationships between penetration rate and bit life
- the role that core blockages play in affecting sample quality
- the functions of drilling fluids and control procedures
- relationship between hole diameter, rod diameter, pump output and the specific gravity of formation cutting
- types of mud and water delivery pumps and their applications
- the purpose of drill hole surveys and the functions of azimuth and dip readings
- purpose and principles of core orientation

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting conventional core drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conventional core drilling tasks • working with others to undertake and complete the conventional core drilling tasks that meets all of the required outcomes • consistent timely completion of conventional core drilling tasks that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conventional core drilling tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity, Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards include:	• incorrect speed of operation • inadequate maintenance • inner tube drop off
Coordination requirements may include:	• drill team • other equipment operators

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	• maintenance personnel • supervisors • worksite personnel
Drill rods may include:	• conventional or wireline drill rods • casing - steel, PVC
Drill bits may include:	• blade bits • tricone bits • PCD bits • surface set diamond core bits and reamer shells • impregnated diamond core bits and reamer shells • non-core diamond bits

Fluids may include:	• drilling mud and additives:
	  • polymers
	  • soluble oils
	  • fluid loss additives
	  • water
	  • salt
	• cement and cement additives
	• two part urethane foam
	• sealants - urethane foam, cement, gypsum

Core barrels may include:	• conventional single tube core barrels • conventional double tube core barrels • conventional triple tube core barrels • starter barrels • chrome barrels
Rod and casing handling equipment may include:	• manual handling • hoist plug • mechanised rod handlers • foot operated rod safety clamp • hydraulic rod/casing clamps • hydraulic rod/casing spinner • hook and clamshell
Collar attachments may include:	• stuffing boxes • fluid control valves • T pieces • gas control equipment
Survey and core orientation devices may include:	• single shot survey camera - mechanical/electronic • multi shot survey camera - electronic/mechanical

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	• digital survey devices • spear type core orientation device • ball type core orientation device • pin type orientation devices • electronic orientation devices
Samples may include:	• sampling from mud rotary • collection of sludge • core samples
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB308A Conduct wireline core drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of wireline core drilling in resources and infrastructure industries. It includes planning and preparing for conducting of wireline core drilling; operating a core drill, drill fluid system and wireline; maintaining equipment; using hole survey and core orientation equipment; taking core samples; and responding to problems.

Application of the Unit

Core drilling may also be called diamond core drilling, diamond drilling or coring. It is used for environmental, geotechnical and mineral exploration drilling. This unit is appropriate for those working in a driller role, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for conducting of wireline core drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Operate a core drill efficiently to achieve targets	2.1. Identify and use different ***drill rod*** and casing types, thread forms and thread make up parameters 2.2. Select appropriate ***drill bits*** and reamer shells 2.3. Adjust inner tube length to ensure appropriate fluid flow around the core 2.4. Use ***rod and casing handling equipment*** safely 2.5. Add/break out and remove drill rods/pipes and down hole equipment 2.6. Apply appropriate rotation speed, weight on the bit, drilling fluid flow rate and penetration rate applicable to the ground conditions 2.7. Measure drill string components and calculate depth of hole 2.8. ***Collar*** holes 2.9. Install casing
3. Operate drill fluid system	3.1. Identify hole conditions requiring the use of ***drilling fluids*** and chemicals 3.2. Select, prepare, apply, test and monitor suitable fluids and additives 3.3. Monitor fluid return and solids content and implement control measures 3.4. Monitor fluid and cuttings specific gravity and up hole velocity to ensure efficient hole clearing 3.5. Monitor causes of pressure in fluid systems 3.6. Select the appropriate fluid pumping rate for the hole size

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4. Operate wireline	4.1. Control hazards associated with the use of wireline systems 4.2. Use overshot retrieval and dry release system 4.3. Assemble and maintain wireline overshot 4.4. Use pump in and dry hole lowering devices
5. Maintain equipment	5.1. Use the required ***personal protective equipment*** and follow safe working procedures when using grinders 5.2. Strip impregnated bits according to manufacturer/company procedures 5.3. Dismantle and service backend assembly 5.4. Dismantle ***core barrels***, service and replace worn/damaged components 5.5. Dismantle wireline retrieval components service and replace worn/damaged components if required 5.6. Maintain drill string 5.7. Maintain bit management, record required information and store bits correctly
6. Use hole survey and core orientation equipment	6.1. Use survey tool, as required 6.2. Assemble and maintain ***survey and core orientation devices*** 6.3. Read and record survey data 6.4. Operate core orientation devices as required
7. Take core samples	7.1. Implement control measures for minimising core loss 7.2. Identify core blockages affecting ***sample*** quality
8. Respond to problems	8.1. Identify possible problems in equipment or process 8.2. Determine problems needing action 8.3. Determine possible fault causes 8.4. Rectify problem using appropriate solution within area of responsibility 8.5. Follow through items initiated until final resolution has occurred 8.6. Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct wireline core drilling:

- apply legislative, organisation and site requirements and procedures for conducting of wireline core drilling
- apply routine checks and basic maintenance to mud and water delivery pumps
- identify, mix and apply collar sealants
- apply collar casing equipment attachment techniques
- apply basic drilling fluid tests such as viscosity and specific gravity
- apply core handling and tray placement requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct wireline core drilling:

- configuration requirements of various thread forms and make-up torque requirements
- function of hole collaring, use of casing and collar sealing techniques
- methods required to produce uncontaminated samples
- impregnated bit stripping procedures
- bit selection for different types of drilling and different ground conditions
- measurement of bits and other related components
- critical dimensions of a core barrel if barrel has to be drilled through to reduce hole size
- relationships between penetration rate and bit life
- role that core blockages play in affecting sample quality
- functions of drilling fluids and control procedures
- relationship between hole diameter, rod diameter, pump output and the specific gravity of formation cutting
- types of mud and water delivery pumps and their applications
- hazards associated with wireline operations and control measures required
- purpose of drill hole surveys and the functions of azimuth and dip readings and where it is applied
- core orientation and where it is applicable

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting wireline core drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of wireline core drilling • working with others to undertake and complete wireline core drilling tasks that meet all of the required outcomes • consistent timely completion of the wireline core drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the wireline core drilling tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• snags in wire rope • incorrect spooling of wire • wireline 'throwing a loop' • incorrect speed of operation • wireline overrun • inadequate maintenance

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	• inner tube drop off
Coordination requirements may include working with:	• members of the drill team • other equipment operators • maintenance personnel • supervisors • mine personnel
Drill bits may include:	• blade bits • tricone bits • PCD bits • surface set diamond core bits and reamer shells • impregnated diamond core bits and reamer shells • non-core diamond bits • RetractaBit system
Drill rods and casing may include:	• wireline drill rods • casing may be steel or PVC
Rod and casing handling equipment may include:	• manual handling • hoist plug • mechanised rod handlers • foot operated rod safety clamp • hydraulic rod/casing clamps • hydraulic rod/casing spinner • hook and clamshell
Collar attachments for underground drilling may include:	• stuffing boxes • fluid control valves • T pieces • gas control equipment

Drilling fluids may include:	• drilling mud and additives:
	  • polymers
	  • soluble oils
	  • fluid loss additives
	  • water
	  • salt
	• cement and cement additives:
	  • two part urethane foam
	  • sealants - urethane foam, cement, gypsum

Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection

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	• general protective and reflective clothing
Survey and core orientation devices may include:	• single shot survey camera - mechanical/electronic • multi shot survey camera - electronic/mechanical • digital survey devices • spear type core orientation device • ball type core orientation device • pin type orientation devices • electronic orientation devices
Core barrels may include:	• double tube wireline core barrels • triple tube wireline core barrels • starter barrels • chrome barrels
Samples may include those:	• collected from sludge • core samples

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB309A Conduct guided boring

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of guided boring in the drilling industry. It includes planning and preparing for guided boring, boring pilot holes, completing back reaming and product pull back, maintaining equipment, and responding to problems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for guided boring	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Identify, locate and apply ***personal protective equipment*** 1.5. Raise alarm/report as required according to site procedures 1.6. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Bore pilot hole	2.1. Confirm that all preliminary and safety checks have been done 2.2. Fit locating device to ***drill head*** and attach drill head to drill stem 2.3. Align drilling head with survey tool and survey control system 2.4. Drill pilot hole according to design alignment 2.5. Monitor drill path ensuring pilot hole meets conformance envelope and dogleg severity is within limits 2.6. Add drill stem sections as required 2.7. Steer, and where required, zone steer drill head to achieve required pitch and direction 2.8. Monitor and interpret all gauge/dial readings 2.9. Monitor and interpret drill ***fluid*** return and drill spoil 2.10. Monitor and interpret drill head position and pitch 2.11. Maintain communication with all relevant personnel 2.12. Maintain drill log and reports as required
3. Complete back reaming, and product pull back	3.1. Lock out machine 3.2. Remove drill head

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	3.3. Check free rotation of swivel 3.4. Connect appropriate ***back reamer***, swivel and ***product*** 3.5. Locate product feed to prevent damage and within breakover limitations 3.6. Check all safety precautions are in place and restart machine 3.7. Back reaming/pre-ream, and install product, removing drill stem sections to procedure as required 3.8. Monitor and interpret all gauge/dial readings 3.9. Monitor and interpret drill fluid flow from both ends of hole 3.10. Monitor product feed 3.11. Maintain communication with all relevant personnel 3.12. Take required actions to achieve satisfactory product installation as required 3.13. Maintain drill log and reports as required
4. Maintain equipment	4.1. Monitor wear on drill stem, particularly threads 4.2. Dress damaged threads or replace drill stem as required 4.3. Check all equipment and hoses 4.4. Monitor wear on drill heads and reamers and take required action 4.5. Clean all equipment upon completion of bore, ensuring environmental controls are followed 4.6. Rotate drill stems in stack 4.7. Ensure drill fluid is appropriately contained/disposed of 4.8. Ensure other ***maintenance tasks*** are completed regularly 4.9. Keep site safe for all possible users for the total duration of the job 4.10. Leave site in a safe and tidy condition which complies with all relevant regulations
5. Respond to problems	5.1. Identify possible problems in equipment or process

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	5.2. Determine problems needing action 5.3. Determine possible fault causes 5.4. Rectify problem using appropriate solution within area of responsibility 5.5. Follow through items initiated until final resolution has occurred 5.6. Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct guided boring:

- apply legislative, organisation and site requirements and procedures for conducting guided boring
- interpret site requirements and procedures
- interpret work requirements
- interpret geological and survey data
- apply mechanical and manual handling safety requirements and procedures
- apply metric and imperial units conversion
- apply mathematical calculations using addition, subtraction, multiplication and division
- use a calculator to calculate hole volume

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct guided boring:

- worksite coordination requirements and procedures
- site operating techniques and systems
- monitoring systems and alarms requirements and procedures
- ground preparation requirements and procedures
- inspection, fault finding and reporting requirements and procedures
- routine operator servicing, maintenance and housekeeping requirements and procedures
- site environmental and heritage requirements and constraints
- dust suppression techniques
- drill system characteristics, technical capability and limitations
- use of diagrams, plans and instructions for positioning, recording work or progress

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting guided boring • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of guided boring • working with others to undertake and complete the conduct of guided bores that meets all of the required outcomes • consistent timely completion of guided boring that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of guided bores

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements

Hazards may include:	• working in proximity to drilling rig
	• buried utilities in path of bore, including:
	  • electrical power lines (overhead or buried)
	  • gas pipes
	  • water pipes
	  • waste pipes (including stormwater, trade waste and sewerage)
	• changing geological formations, particularly cobble, rock or unstable/porous formation

Personal protective equipment	• electrically insulating boots and gloves

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may include:	• eye and hearing protection • equipment for confined space entry • general protective clothing
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Drill head may include:	• displacement (e.g. slant nose tool/duck bill - standard or carbide) • cutting (e.g. mud motor, down hole hammer)
Fluid may include:	• bentonite clay • polymer • pH adjusting agents such as soda ash
Back reamer may include:	• spiral • flute • helical
Product may include:	• welded steel pipe • polythene pipe (low/high density) • polypropylene pipe • PVC pipe • plastic drainage (perforated) pipe
Maintenance tasks may include:	• checking threads with thread gauge • dressing threads • lubricating threads and other components • cleaning all equipment and checking for wear and damage

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB310A Conduct surface directional drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting surface directional drilling in coal mining and drilling industries. It includes planning and preparing for drilling, boring pilot hole, maintaining equipment and responding to problems.

Application of the Unit

Directional drilling is undertaken for large diameter bores in hard rock or other difficult geology. The directionally drilled hole may subsequently be reamed and have product pipe installed, or it may be for coal seam methane drainage or similar. This unit is appropriate for those working in driller roles, at worksites within:

- Coal mining
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for conducting surface directional drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Bore pilot hole	2.1. Select appropriate cutting tool and drilling rig and components 2.2. Confirm that all preliminary and safety checks have been done 2.3. Fit locating device to ***drill head*** and attach drill head to drill stem 2.4. Align drilling head with survey tool and survey control system 2.5. Drill pilot hole according to design alignment 2.6. Monitor drill path ensuring pilot hole meets conformance envelope and dogleg severity is within limits 2.7. Add drill stem sections as required 2.8. Steer drill head to achieve required pitch and direction 2.9. Monitor and interpret all gauge and dial readings 2.10. Monitor and interpret ***drill fluid*** return and drill spoil 2.11. Monitor and interpret drill head position and pitch 2.12. Maintain communication with all relevant personnel 2.13. Maintain drill log and reports as required
3. Maintain equipment	3.1. Monitor wear on drill stem, particularly threads 3.2. Dress damaged threads or replace drill stem as required

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	3.3. Check all equipment and hoses 3.4. Monitor wear on drill heads and reamers and take required action 3.5. Clean all equipment on completion of bore, ensuring environmental controls are followed 3.6. Rotate drill stems in stack 3.7. Ensure drill fluid is contained or disposed of appropriately 3.8. Keep site safe for all possible users for the total duration of the job 3.9. Leave site in a safe and tidy condition which complies with all relevant regulations
4. Respond to problems	4.1. Identify possible problems in equipment or process 4.2. Determine problems needing action 4.3. Determine possible fault causes 4.4. Rectify problem using appropriate solution within area of responsibility 4.5. Follow through items initiated until final resolution has occurred 4.6. Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conducting surface directional drilling:

- apply legislative, organisation and site requirements and procedures
- apply machine operating procedures
- apply ancillary equipment operating procedures, including communications equipment, locators and fluid mixers
- attach drill head, back reamer, product
- dress slightly damages drill stem threads

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conducting surface directional drilling:

- basic rock and geology types and their impact on HDD operations
- appropriate drill heads for different geology types
- appropriate back reamers for different geology types
- minimum radius of curvature for drill stem and for different products
- methods of steering drill head
- principles of HDD
- types of drill fluid, their uses and make up and adjustment procedures
- state regulations and codes, including NSW WorkCover *code of practice for excavation* and similar requirements in other states

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting surface directional drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of surface directional drilling • working with others to undertake and complete surface directional drilling that meets all of the required outcomes • consistent timely completion of surface directional drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete surface directional drilling

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements

Hazards may include:	• handling and moving loads
	• moving components on drilling rig
	• overhead and underground utilities, including:
	  • electrical power lines (overhead or buried)
	  • gas pipes
	  • water pipes
	  • waste pipes (including stormwater, trade waste and sewerage)
	• inadequate communication

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	• rotating equipment • noxious gases • flammable gases
Coordination requirements may include:	• drill team • operators of other equipment • maintenance personnel • supervisors • worksite personnel
Drill heads include:	• tri-cone rock bits • other down hole cutting tools
Drill fluids may include:	• Bentonite clay • polymer • pH adjusting agents such as soda ash
Operational problems may include:	• buried utilities in path of bore • changing geological formations, particularly cobble, rock or unstable/porous formation • reliable communications with assistant(s) • selection of best drill head and back reamer

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB311A Conduct mud rotary drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of mud rotary drilling in resources and infrastructure industries. It includes planning and preparing for conducting of mud rotary drilling; operating mud rotary drills and fluid systems; maintaining equipment; and responding to problems.

Application of the Unit

Rotary mud drilling is used for environmental, geotechnical, mineral exploration and waterwell drilling. This unit is appropriate for those working in a driller roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for conducting of mud rotary drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Operate mud rotary drill	2.1. Make up appropriate drill string. 2.2. Use bits, rods and casings 2.3. Seal hole collar 2.4. Feed and rotate drill at right rate for the formation 2.5. Interpret flow from drill to determine conditions at bit 2.6. Adjust flow rates to give desired results 2.7. Check drill bits and string components for wear, gauge, dents and damaged threads 2.8. Use casing, grout screens to correct zones or levels as required
3. Operate fluid system	3.1. Determine required up hole velocity and the related fluid properties and feed rate 3.2. Recognise different types of strata 3.3. Design and adjust mud system to suit geological conditions and changes to conditions which might be expected during the drilling 3.4. Ensure there is an adequate supply of water to the site for mud requirements and circulation loss zones 3.5. Make up appropriate formulation using different types of mud and ***chemicals*** 3.6. Construct mud pits and systems to suit hole dimensions and site storage requirements 3.7. Monitor, check and adjust flow rate and properties 3.8. Keep fluid clean and chlorinate/sanitise lost circulation if required

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	3.9. Check and adjust fluid reticulation systems 3.10. Dispose of ***drill fluids*** correctly
4. Maintain equipment	4.1. Monitor wear and recognise symptoms of malfunction 4.2. Check all ***equipment*** and hoses 4.3. Monitor all seals and connections 4.4. Replace, adjust and report items needing attention. 4.5. Service gear and adjust glands where required 4.6. Service rig regularly following service sheets for daily, weekly and monthly lubrication and checking 4.7. Check oil drops for signs of repairs needed 4.8. Maintain inspection and/or service records
5. Respond to problems	5.1. Identify possible ***operational problems*** in equipment, process or mud 5.2. Determine problems needing action 5.3. Determine possible fault causes 5.4. Rectify problem using appropriate solution(s) within area of responsibility 5.5. Follow through items initiated until final resolution has occurred 5.6. Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct mud rotary drilling:

- apply legislative, organisation and site requirements and procedures for conducting of mud rotary drilling
- perform routine checks and basic maintenance of mud and water delivery pumps
- apply mechanical hand skills
- apply mud mixing and conditioning skills
- apply plant operational skills
- respond to changes in ground conditions
- apply sample identification and sampling skills
- apply hazardous substances handling requirements and procedures
- apply people skills for dealing with clients, co-workers and management
- apply recording and reporting skills
- interpret materials safety data sheets (MSDS)
- apply heavy vehicle driving skills in all conditions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct mud rotary drilling:

- rotary drilling safety requirements and procedures
- personal protection requirements
- First Aid requirements and procedures
- good housekeeping requirements and procedures
- types of mud and water delivery pumps and their applications
- methods for the calculation of lag time for discrete formation samples
- basic geology
- safe work procedures for pump unit repairs, maintenance and servicing

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conducting of mud rotary drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of mud rotary drilling tasks • working with others to undertake and complete mud rotary drilling tasks that meet all of the required outcomes • consistent timely completion of the conducting of mud rotary drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete mud rotary drilling tasks

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• release of gases from formation or samples obtained • spread of contaminants as a result of drilling or cleaning processes • change in the chemistry of contaminants as a result of drilling and recovery of the samples

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	• working in proximity to drilling rig • use of high pressure air for drilling operations • entanglement in rotating pipes • string makeup and breakout hazards • drilling equipment and down-hole tools will depend on the air drilling method being used
Coordination requirements may include	• drill team members • other equipment operators • maintenance personnel • supervisors • worksite personnel
Chemical includes:	• fluid loss control agents • dispersants • surfactants • weighing agents (barium sulphate or salts) • pH control agents • gypsum based setting agents • other cement grout additives for quick setting • agents for treating cement contamination • flocculation products • potassium chloride • lost circulation materials (granular polymers, cottonseed hulls, mica flakes, shredded organic fibre, micro-cells and short polysynthetic rope fibres) • A&B foam (for sealing collars) • chlorination products
Drill fluids may include:	• water • viscosifying polymer muds with or without use of sodium bentonite • blended polymer muds • API bentonite muds • high yielding bentonites muds • organic polymer muds • polyanionic cellulosic polymer muds • modified natural polymer muds • liquid anionic polymer muds
Equipment includes:	• rig, water trucks, service trucks, air compressor • hand tools such as breakout tongs and stillsons • collars • stabilisers • drill pipe

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	• casing • drill bits such as drag, tricone, tungsten carbide, hammers, strata, diamond, reamers
Operational problems may include:	• circulation loss zones • machine breakdowns • equipment failure • drill bit failure/breakage • deterioration in the mud condition

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB312A Conduct raise boring

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting raise boring in the metalliferous mining industry. It includes: planning, preparing and setting up for drilling; locating collar and drill pilot hole; drilling and monitoring progress of pilot hole; reaming raise bore; packing-up drill site; and carrying out operator maintenance and housekeeping activities.

Application of the Unit

This unit is appropriate for those working in a driller roles, in underground mines within:

- Drilling
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply shift changeover details, geo-technical reports and ***drill plan*** for the allocated task 1.3. Inspect and assess site conditions to identify and manage possible scaling requirements, misfires and other ***hazards and potential risk*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Select and wear ***personal protective equipment*** appropriate for work activities
2. Set up for drilling	2.1. ***Set up*** the raise bore ***drill rig*** site 2.2. ***Locate*** the drill rig on the prepared pad and position and check alignment as specified according to drill plan 2.3. ***Secure*** drill rig to the pad using recommended equipment and anchors 2.4. ***Stand*** drill rig in specified position according to drilling plan 2.5. ***Connect components*** to drill rig 2.6. ***Test raise drill*** for correct, safe operation 2.7. Calculate rods needed to drill to depth, and set up drill rack 2.8. Load drill rods and equipment onto drill rack 2.9. Conduct ***equipment pre-start checks*** to ensure equipment is safe and ready to use
3. Locate collar and drill pilot hole	3.1. ***Inspect*** and assemble ***collaring*** starter equipment 3.2. Install ***dust suppression and extraction*** systems 3.3. Confirm and set drill direction accurately and collar hole as specified in the drill plan 3.4. Install assemblies in collared hole to allow pilot hole drilling to be carried
4. Drill and monitor progress of	4.1. ***Inspect job-site*** for safe working conditions

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pilot hole	4.2. Maintain safety of driller and surrounding ***personnel*** 4.3. Interpret drill plans and drill holes to design 4.4. Operate equipment safely within working environment limitations and ground conditions 4.5. Monitor ***ground conditions*** and adjust ***drilling techniques*** and components to maintain efficient drilling operations 4.6. Monitor drilling progress using appropriate ***equipment indicators*** 4.7. Carry out and monitor drill "break through" procedures and inspect break through 4.8. Remove housing assemblies
5. Ream raise bore	5.1. Coordinate personnel to attach the reaming head to drill string 5.2. Communicate with appropriate personnel to ensure safe removal of raise bore cuttings 5.3. Maintain safety of driller and surrounding personnel 5.4. Operate equipment safely within working environment limitations and ground conditions 5.5. Monitor ground conditions and adjust ***reaming techniques*** to maintain efficient drilling operations 5.6. Diagnose and take appropriate action to manage ***reaming problems*** and advise appropriate personnel 5.7. Remove and store reamer
6. Pack-up drill site	6.1. De-rig equipment 6.2. Confirm equipment is ready for transport
7. Carry out operator maintenance	7.1. Carry out shutdown procedures 7.2. Service and make minor adjustments to equipment 7.3. Visually inspect *equipment* and report faults and make equipment available for routine operational servicing
8. Carry out housekeeping activities	8.1. ***Clean equipment*** to maintain condition of equipment and ensure safe and efficient operations

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	8.2. Clear site of debris and excess stores 8.3. Clean and store ***auxiliary service*** equipment 8.4. Complete all required documentation clearly, concisely and on time 8.5. Pass on end of shift information to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct raise boring:

- apply legislative, organisation and site requirements and procedures
- use clinometers
- read and interpret plans
- use hand and power tools
- set up and load rod rack
- set up and align a raise bore in readiness for drilling
- attach and remove drill rods, bits and reamers
- pack up raise drill in readiness for transport

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct raise boring:

- auxiliary services procedures
- cleaning procedures
- down hole problems
- drilling procedures
- calculating and setting drill angles
- environmental procedures
- drilling equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data
- inspection procedures
- isolation procedures
- manufacturer's specifications
- mining regulations
- operational procedures and checks
- recovery procedures
- site safety requirements
- start-up and shutdown procedures
- storage procedures
- towing procedures
- underground procedures
- dealing with misfires

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Evidence Guide

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Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting raise boring • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of raise boring • working with others to undertake and complete raise boring that meets all of the required outcomes • consistent timely completion of raise boring that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the raise boring

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Drill plan may include:	• access to inclines and decline • drive plan • equipment and resource allocations/requirements • face • geological details • verbal or written instructions • worksite details • services • stope • drilling angles • breakthrough
Hazards and potential risks may include:	• ground control failure • scaling requirements • lack of ventilation • vertical openings • limited egress • loose material on working surface • misfires • gases • entry by unauthorised personnel • unstable ground conditions • airborne dust and fibres • unstable footing • poor housekeeping • noise

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	• rotating machinery (drill rods) • electrical hazards • airborne rock fragments
Coordination requirements may include:	• rig operator • observers • site communicator • LHD unit operator
Personal Protective Equipment may include:	• eye protection • hearing protection • gloves • helmet • boots
Setting up rig may involve:	• locating minor components • packing components with sandbags to ensure level and stability
Drill rigs may be:	• electric • hydraulic • pneumatic • rotary • track
Locating drill rig may involve:	• towing or manoeuvring the derrick sled on the pad • conducting final position adjustments • aligning sled rails • ensuring rails and pad are free of contaminants
Securing drill may include:	• collecting equipment for securing the rig • drilling hole through sled • cleaning out drill holes • inserting resin cartridges to secure bolts • tightening nuts on rock bolts
Standing drill rig may include:	• cleaning and greasing parts • checking turnbuckles • connecting to power supplies • standing and checking that rig is at appropriate angle • inserting back pins
Connecting components may include:	• hanging out cable hangers • checking, cleaning and connecting hydraulic • checking, cleaning and connecting air and water supplies • running out air and water lines to derrick

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	• installing and testing pumps • connecting power and testing motor rotation
Testing raise drill may include:	• rig rotation • rig crosshead movement • rig slow and fast up and down • pipe loader grip close and open • pipe loader swing and tilt • emergency stops • indicator lights • components move freely • correct pressures are attained • computer readings
Equipment may include:	• collar piping • covering devices (plugs, cones, hessian bags) • drill rig (electric/hydraulic, pneumatic) • drilling components (drill rods, bits,) • extra lighting (flood lights) • flags • hoses • inclinometer • lifting and handling equipment • measuring tape • oils • paint (spray cans) • plates • recovery equipment • scaling bars • signs • support vehicles • tamping stick/tapes • witches hats • recommended/required PPE
Equipment pre-start checks may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • computer systems • display instrumentation and gauges (indicators, gauges, laser levels) • fire and suppression systems • fire extinguishers • fluid levels (hydraulic oil, coolant, grease, water, engine oil, fuel) • visual and audio warning devices and lights

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	• drilling equipment (hydraulic hoses, bits and couplings) • drill rig platform, steps and hand rails
Inspecting collaring may include:	• ensuring that collaring bush wear is in recommended limits • ensuring that all components/parts are free from burrs and damage • ensuring that drill bit is free with no excessive play
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site • Blooie housing
Job-site inspections may include:	• ventilation • air and water services • scaling requirements • pumps • signs and barricades • post firing rock falls • site housekeeping
Personnel may include:	• blasters • contractors • drillers • drivers • holders of appropriate tickets • inspectors • licensed operators • maintenance staff • personnel authorised by mine management • service personnel • supervisors • surveyors • tradespersons
Ground conditions may include:	• broken ground • dryness • location of water table • noise • slope of working surface • stability of ground • stable ground (compaction) amount of scale

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	• ventilation characteristics (fumes, dust) • visibility/wet • breakthrough
Drilling/reaming techniques may include:	• adjustment to feed • removing debris • rotation • speed and pull force adjustments
Equipment indicators may include:	• pressure gauges • control panel readings • rotation • depth markers
Equipment cleaned may include:	• platform • steps and hand rails (removal of oil, grease, debris) • drill rods
Auxiliary services may include:	• compressed air • de-watering pumps • electricity • ventilation • water
Drilling/reaming problems may be:	• environmental • geological (ground conditions) • mechanical (bogged)

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB313A Conduct cable tool drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of cable tool drilling in the drilling industry. It includes planning and preparing for cable tool drilling, operating cable tool drills, operating drill fluid systems, maintaining equipment, recovering formation samples, and responding to problems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for cable tool drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Raise alarm/report as required according to site procedures
2. Operate cable tool drill	2.1. Identify and use different ***tool***/***casing types***, ***thread forms*** and thread make up parameters 2.2. Select ***appropriate bits***, ***shoes***, ***clamps***, ***casing***, ***tools and lifting devices*** for the expected formations 2.3. Use tool ***handling equipment*** such as spanners and chain tongs safely 2.4. Assemble tool strings according to organisation or manufacturer's procedures 2.5. Maintain correct tension on the drill line and correct stroke rate during drilling operations 2.6. Bail hole of cuttings as required to maintain satisfactory penetration rates 2.7. Control ***hazards associated with the use of wire rope*** for drilling and bailing 2.8. Measure drill string components and calculate depth of hole 2.9. Select drilling ***tools to maintain hole straightness*** 2.10. Drive and jack casing as required 2.11. Select appropriate ***tools to undertake fishing operations***
3. Operate drill fluid system	3.1. Identify hole conditions requiring the use ***of drilling fluids***/chemicals 3.2. Select, prepare, apply, test and monitor suitable fluids and additives 3.3. Adjust fluid level in the hole to maintain

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	hole stability and optimise penetration rates 3.4. Dispose of drill fluids in an environmentally safe manner
4. Maintain equipment	4.1. Sharpen bits or remetal rope swivels in accordance with ***personal protective equipment*** and safety requirements 4.2. Clean and lubricate rope swivels to ensure correct operation 4.3. Check slings, drill lines and bailing lines for wear and replace as necessary using appropriate wire rope and spooling 4.4. Grease derrick sheaves regularly 4.5. Examine critical rig components such as sheaves and shackles regularly for wear or cracks 4.6. Maintain ***tool string components*** 4.7. Adjust clutch play, drive belt and jockey pulley tension as required 4.8. Perform routine maintenance to rig engine
5. Recover formation samples	5.1. Select appropriate ***sampling tools/methods*** depending on the type of formations being drilled 5.2. Obtain formation water samples as required
6. Respond to problems	6.1. Identify possible problems in equipment or processes 6.2. Determine problems needing action 6.3. Determine possible fault causes 6.4. Rectify problem using appropriate solution within area of responsibility 6.5. Follow through items initiated until final resolution has occurred 6.6. Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.
Required skills
Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct cable tool drilling: • apply legislative, organisation and site requirements and procedures for conducting cable tool drilling • welding • oxy-acetylene use
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct cable tool drilling: • welding to dress bits, casing shoes • remetalling rope sockets

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting cable tool drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of cable tool drilling • working with others to undertake and complete the conduct of cable tool drilling that meets all of the required outcomes • consistent timely completion of cable tool drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of cable tool drilling

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Tool/casing types andthread forms may include:	• AWW casing • slimline casing • API tool threads • goldfields tool threads • Southern Cross tool threads

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Appropriate bits, **shoes**, **clamps**, **casing**, **tools and lifting devices** may include:	• spudding bits • undercutting bits • star bits • chisel bits • jars • drive clamps • casing lift/drive caps
Handling equipment may include:	• tool spanners • tool wrenches • slings • chain tongs • casing clamps • casing jacks
Hazards associated with the use of wire rope may include:	• snags in wire rope • incorrect spooling of wire • wireline 'throws a loop'
Tools to maintain hole straightness may include:	• drill stem stabilisers • torpedo bits
Tools to undertake fishing operations may include:	• friction sockets • overshots • lead impression tools • wall hooks • casing spears • rope spears • rope cutter • latch jacks • fishing jars
Drilling fluids and additives may include:	• water • API bentonite • native clays • various polymers • barite (barium sulfate) • dispersants • loss circulation products
Personal protective equipment may include:	• welding mask/goggles • welding gloves • ear protection • eye protection • safety boots • hard hat

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	• sunscreen
Tool string components may include:	• swivel socket and mandrel • cable tool joints • cutting edges on bits • drilling jars • bailers
Sampling tools/methods may include:	• sampling by bailer • sand barrel • clay barrel • chop pump • earth socket

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB315A Conduct top-hole hammer drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of top-hole hammer drilling in the drilling industry. It includes planning and preparing for top-hole hammer drilling, operating top-hole hammer drilling, using drilling fluids, maintaining equipment, and responding to problems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for top-hole hammer drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Select ***tools and equipment*** to carry out tasks consistent with ***driller's duties*** and the requirements of the job, check for serviceability and rectify or report any faults 1.6. Check ***restraining devices*** on all pressure hoses 1.7. Fit/replace restraining devices on pressure hoses as required 1.8. Raise alarm/report as required
2. Operate top hole hammer drill	2.1. Select appropriate rod type, thread form and drill string components for job 2.2. Measure and select appropriate bit for the job 2.3. Collar hole 2.4. Use rod handling equipment safely and correctly 2.5. Add/break out and remove drill rods/pipes and top hole equipment 2.6. Adjust/feed/rotate drill at right rate for optimum penetration 2.7. Adjust impact pressure and rate to match ground conditions 2.8. Adjust air pressure to achieve required hole clearance 2.9. Measure line string and calculate depth of hole
3. Use drilling fluids as required	3.1. Identify hole conditions requiring the use of dust control ***fluids*** 3.2. Select suitable ingredients/fluids 3.3. Prepare/monitor the preparation of required

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	fluids 3.4. Use dust control fluids to achieve required result
4. Maintain equipment	4.1. Monitor wear 4.2. Check all equipment and hoses 4.3. Replace shanks as required 4.4. Replace/adjust and report damaged/worn parts as required 4.5. Undertake bit sharpening as required 4.6. Grease drifter as required
5. Respond to problems	5.1. Monitor operation and chips/***sample***/air return 5.2. Identify possible problems in equipment or process 5.3. Clear blockages 5.4. Determine other problems and ***maintenance tasks*** needing action 5.5. Determine possible fault causes 5.6. Rectify problem using appropriate solution within area of responsibility 5.7. Follow through items initiated until final resolution has occurred 5.8. Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct top-hole hammer drilling:

- apply legislative, organisation and site requirements and procedures for conducting top-hole hammer drilling
- identify various thread types on the equipment at site and the application of prescribed torque
- identify worn drill pipe and damaged threads
- identify and measure various bits in use
- correctly use the various rod/pipe handling equipment on site
- correctly and competently add/remove rods/pipe from the string
- correctly apply rotation speed and weight on the bit to maintain optimum performance
- correctly measure line string components and calculate hole depth
- utilise the correct combination of hydraulic oil flow volume and pressure to maintain productivity
- collar holes
- ensure that samples are correctly collected and handled
- ensure that all string components are correctly maintained
- correctly measure bits and related components to ensure compatibility
- ensure that bit sharpening equipment, used to sharpen TC bits are used correctly and safely and that bits are sharpened to correct tolerances
- correctly select various bit types for differing ground conditions
- monitor sample quality and correctly interpret changes
- use prescribed techniques to safely clear sample delivery hose blockages
- accept responsibility for the correct installation and maintenance of restraining devices to pressure and sample delivery hoses
- communicate the hazards of cuttings in the return air stream to all crew members
- ensure that drill pipe is inspected regularly and wear rates monitored
- ensure that threads are inspected and maintained as required

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct top-hole hammer drilling:

- critical need to match like threads with like threads on all tubular components and

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make up torque requirements

- parameters relating to wear of drill pipe and integrity of threads
- function of hole collaring
- methods required to limit the contamination of samples
- theory behind TC bit sharpening
- bit selection for different types of drilling and different ground conditions
- problems related to inaccurate measurement of bits and other related components
- importance of monitoring sample quantity
- role that blockages play in affecting sample quality
- methods commonly used to clear down hole blockages in air drilled holes and the hazards associated with clearing blockages
- methods used to clear a blockage in a sample delivery hose and the hazards associated with clearing blockages
- critical need for restraining devices to be fitted to all pressure delivery hoses and sample delivery hoses, the devices available and their methods of attachment
- dangers of drilled samples being returned to the surface at high velocity in air drilling operations and the parameters involved
- importance of checking gauges and monitoring pressures, flow rates and temperatures

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Evidence Guide

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Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for top-hole hammer drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of top-hole hammer drilling • working with others to undertake and complete the conduct of top-hole hammer drilling that meets all of the required outcomes • consistent timely completion of top-hole hammer drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of top-hole hammer drilling

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig • injuries to fingers, hands and back • incorrect speed of operation • inadequate maintenance • heat, dust, fatigue, dehydration • high pressure air discharge • high pressure hydraulic fluid discharge • leakage of couplings • flailing couplings • flailing components

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	• fire • rock fall • void ground
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel

Tools and equipment may include:	• drill rods and drill pipe including:
	  • shanks
	  • API threads
	  • BECO threads
	  • thread protectors
	• drill bits including:
	  • cross bits, button bits and retrac bits
	  • DTH hammer concave, convex and flat face bits
	• rod and casing handling equipment:
	  • manual handling
	  • mechanised rod handlers
	  • hydraulic pipe/rod/clamps
	  • hydraulic pipe/rod/spinner
	• make and break:
	  • stillsons
	  • hydraulic pipe wrenches
	  • rod spinners
	  • hydraulic make/break devices
	  • make up torque requirements
	• bit break out plates

Driller's duties may include:	• using correct rod to hole diameters • selecting best bit configuration for ground and hole conditions • maintaining correct rotation speed and weight on bit for optimum penetration • calculating line string and hole depth • using correct combination of air volume and pressure to suit drilling conditions • monitoring collection and bagging of samples • ensuring all equipment is kept clean and stored correctly • ensuring principles of good housekeeping are followed

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	• measuring bit diameters
Restraining devices may include:	• internal/external whip checks • full 'sock' whip checks • anchor points • hose fittings
Fluids may include:	• dust control additives • water
Sample and sampling tasks may include:	• DTH samples
Maintenance tasks may include:	• sharpening button bits, cross bits • using grinders, bit sharpening machines • line string components (e.g. drill rods, subs, stabilisers, couplings, air swivels) • drill bits

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB316A Conduct underground in-seam directional drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of underground in-seam directional drilling in coal mines. It includes planning and preparing for drilling, calibrating and operating survey tool, drilling holes, and completing documents, reports, equipment maintenance and housekeeping.

Application of the Unit

Underground in-seam directional drilling is conducted for gas extraction and water drainage, barrier proving and exploration in underground coal mining operations. This unit is appropriate for those working in driller roles, at worksites within:

- Coal mining
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for conducting of underground in-seam directional drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Calibrate and operate survey tool	2.1. Calibrate survey tool in accordance with instructions 2.2. Set up the orientation of the survey tool and the down-hole motor in accordance with instructions 2.3. Take the first survey reading in accordance with manufacturer's instructions and with regard to the standpipe length and composition and use the result to adjust the orientation of the down-hole motor 2.4. Conduct on-going surveys at intervals in accordance with the ***drill plan*** and use the result to adjust the orientation of the down-hole motor 2.5. Monitor and maintain the survey tool power supply and basic consumable items as per instructions
3. Drill hole	3.1. Prepare for drilling in accordance with the ***drill plan*** 3.2. Choose ***drill bits*** appropriate to the geology 3.3. Issue clear and timely ***instructions*** to drill team members and others involved, for the safe, effective and efficient conduct of the task, to meet the requirements of ***drill plan*** 3.4. Carry out the drilling in accordance with the ***drill plan*** 3.5. ***Monitor*** and adjust ***drilling technique*** according to ***conditions*** 3.6. Identify and remedy ***operational problems*** 3.7. Reorientate the down-hole motor when branching is required to achieved required

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	deviation of the hole 3.8. Maintain communication with all ***relevant personnel***
4. Complete documents and report	4.1. Maintain drill log and plot drilling data 4.2. Download survey instrument data system and upload data to site and/or work computer system 4.3. Report data and drilling plots
5. Complete equipment maintenance and housekeeping	5.1. Ensure that the drill rods are inspected for wear and damage and that threads are dressed and greased in accordance with standard procedures or that rods are replace as required 5.2. Monitor all drill equipment and hoses and ***ancillary equipment*** and carryout ***remedial action*** 5.3. Monitor wear on drill bit and reamers and take appropriate action 5.4. Apply health, safety and environmental controls 5.5. Maintain safe and tidy site for the duration and at the conclusion of the job 5.6. Ensure all drilling equipment is cleaned and maintained 5.7. Ensure that drill fluids are appropriately contained and disposed of appropriately

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct underground in-seam directional drilling:

- apply legislative, organisation and site requirements and procedures for the conducting of underground in-seam directional drilling
- apply safe manual handling practices
- apply drill rig operating procedures
- apply survey equipment operating procedures
- apply drill bit, down-hole motor, and survey tool attaching procedures
- apply operational communication procedures
- apply inspection and monitoring procedures
- apply maintenance procedures
- interpret drill plans
- apply ancillary equipment operating procedures, including; communications equipment, computer equipment, pumps, ventilation equipment, separator pods and fluid mixers

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct underground in-seam directional drilling:

- legislative, organisation's and site OHS requirements
- potential underground directional drilling hazards
- potential work place hazards
- potential underground environmental hazards
- principles of underground in-seam directional drilling operations
- organisation's operational requirements and procedures
- manufacturer's requirements and procedures
- specific handling requirements for underground drilling equipment
- housekeeping requirements and procedures
- basic geology types and their impact on underground in-seam directional drilling operations
- appropriate drill bits for different geology types
- appropriate reamers for different geology types
- importance and functions of the standpipe

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- maximum radius of curvature for drill string
- types of drill fluid and their applications

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting of underground in-seam directional drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conducting of underground in-seam directional drilling • working with others to undertake and complete the conducting of underground in-seam directional drilling that meets all of the required outcomes • consistent timely completion of conducting of underground in-seam directional drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete underground in-seam directional drilling

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include:	• mining equipment • roof and rib spalls • the presence of gases and water • release of gases or water from formation • spread of contaminants as a result of drilling or cleaning processes

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	• working in proximity to drilling rig • use of high air or hydraulic pressure for drilling operations • entanglement in rotating pipes • string makeup and breakout hazards
Coordination requirements may include:	• drill team • other equipment operators • maintenance personnel • supervisors • mine personnel
Drill plan may include:	• hole location, dip and direction • hole sizes • hole depths • site geology • specific drill bits required • frequency of surveys • frequency of floor and or roof hits • coring requirements
Drill bits may include:	• PCD bits • tri-cone rock bits • tungsten bits
Instructions may include:	• likely geology • purpose of the drilling • survey intervals • hole parameters • in-hole drill component requirements
Monitor may include:	• gauge readings • colour and consistency of return water • down-hole motor penetration rate • vibration and noise levels
Drilling technique may include:	• applied feed pressure • rotational speed • regulation of water pressure and volume • use of drilling agents for stabilisation or to enhance flushing (e.g. bentonite, polymers or pH adjusting agents)

Conditions my include:	• variations in geology, including:
	  • consistency of the coal
	  • presence of stone (e.g. shale, sandstone)
	  • presence of clay
	  • faults and jointing

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	• dykes • water and gas emissions from the drill face • variations in environmental conditions (e.g. ventilation)
Operational problems may include:	• changing geological formations, particularly clay, rock or unstable or porous formations • loss of air or water volume or pressure • equipment failure • bogging or parting of rod string • loss of signal from down-hole survey tool • reliability of communications
Relevant personnel may include:	• drill crew members • mine staff and supervisors • site safety personnel • statutory persons
Ancillary equipment may include:	• pumps • water disposal lines and • ventilation equipment
Remedial action may include:	• clear or remove obstructions • replace damaged hoses • top-up lubricants

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB317A Install underground in-seam directional drilling standpipes

Modification History

Not applicable.

Unit Descriptor

This unit covers the installing of underground in-seam directional drilling standpipe in underground coal mines. It includes planning and preparing for the installation; performing rib consolidation; drilling and reaming hole and install standpipe; and maintaining equipment and housekeeping.

Application of the Unit

Underground in-seam directional drilling is conducted for gas extraction and water drainage, barrier proving and exploration in underground coal mining operations. This unit is appropriate for those working in underground in-seam directional driller roles, at worksites within:

- Coal mining
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the installing underground in-seam directional drilling standpipe	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Perform rib consolidation	2.1. Prepare for rib consolidation drilling in accordance with the ***drill plan*** 2.2. Carry out rib consolidation drilling in accordance with the drill plan 2.3. Monitor and adjust ***drilling technique*** according to ***conditions*** 2.4. Identify and remedy ***operational problems*** 2.5. Insert and seal grouting tubes into rib consolidation holes in accordance with the rib consolidation drill plan 2.6. Inject grout through the grouting tubes until visible evidence that grout has migrated into any coal rib fractures or cracks. 2.7. Carryout individual ***grouting completion procedure***.
3. Drill and ream hole and install standpipe	3.1. Prepare for drilling and reaming in accordance with the drill plan 3.2. Choose ***drill bit and reamer*** appropriate to the geology 3.3. Carry pilot hole drilling and ream standpipe hole in accordance with the drill plan 3.4. Monitor and adjust ***drilling technique*** according to ***conditions*** 3.5. Identify and remedy ***operational problems*** 3.6. Prepare and install standpipe in accordance with the drill plan 3.7. Grout in standpipe in accordance with the drill plan 3.8. Maintain communication with all ***relevant***

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	personnel
4. Maintain equipment and housekeeping	4.1. Monitor the drill rods for wear and damage and dress and grease threads in accordance with standard procedures or replace rods as required. 4.2. Monitor all drill equipment and hoses and ***ancillary equipment*** and carryout ***remedial action*** 4.3. Apply environmental controls 4.4. Maintain safe and tidy site for the duration and at the conclusion of the job 4.5. Clean and maintain all grouting equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to install underground in-seam directional drilling standpipe:

- apply legislative, organisation and site requirements and procedures
- apply safe manual handling practices
- operate hand borers
- operate drill rig
- operate grouting equipment
- apply operational communication procedures
- apply inspection and monitoring procedures
- apply maintenance procedures
- interpret drill plans

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to install underground in-seam directional drilling standpipe:

- legislative, organisation's and site OHS requirements
- potential underground directional drilling hazards
- potential work place hazards
- potential underground environmental hazards
- principles of underground in-seam directional drilling operations
- organisations operational requirements and procedures
- manufacturer's requirements and procedures
- specific handling requirements for underground drilling equipment
- housekeeping requirements and procedures
- basic geology types and their impact on underground in-seam directional drilling operations
- appropriate drill bits for different geology types
- appropriate reamers for different geology types
- importance and functions of the standpipe

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the installation of underground in-seam directional drilling standpipe • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the installation of underground in-seam directional drilling standpipe • working with others to undertake and complete the installation of underground in-seam directional drilling standpipe that meets all of the required outcomes • consistent timely completion of the installation of underground in-seam directional drilling standpipe that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of underground in-seam directional drilling standpipe

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks, • specifications • quality of finished works • achievement targets, • operational conditions, • obtaining of permits required • site layout, • out of bounds areas, • worksite inspection requirements, • lighting conditions, • plant or equipment defects, • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• mining equipment • roof and rib spalls • the presence of gases and water • release of gases or water from formation • spread of contaminants as a result of drilling or cleaning processes • working in proximity to drilling rig • use of high air or hydraulic pressure for drilling operations • entanglement in rotating pipes

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	• string makeup and breakout hazards
Coordination requirements may include:	• drill team • other equipment operators • maintenance personnel • supervisors • mine personnel
Drill plan may include:	• rib consolidation hole pattern • standpipe location, dip and direction • hole sizes • hole depths • diameter, length and type of standpipe
Drilling technique may include:	• applied feed pressure • rotational speed • regulation of water pressure and volume

Conditions my include:	• variations in geology, including:
	  • consistency of the coal
	  • presence of stone (e.g. shale, sandstone)
	  • presence of clay
	• water and gas emissions from the drill face
	• variations in environmental conditions (e.g. ventilation)

Operational problems may include:	• loss of air or water volume or pressure • equipment failure • bogging or parting of rod string • reliability of communications
Grouting completion procedure includes:	• stop pumping of grout when grout is visible • relieve pressure from the pump and grout lines, and • disconnect grout pump from tubing
Drill bits and reamers may include:	• PCD bits • Tri-cone rock bits • Tungsten bits
Relevant personnel may include:	• drill crew members • mine staff and supervisors • site safety personnel • statutory persons
Ancillary equipment may include:	• pumps • water disposal lines and • ventilation equipment
Remedial action may include:	• clear or remove obstructions

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	• replace damaged hoses • top-up lubricants

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB318A Install and operate water and gas control equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation and operating of water and gas control equipment in underground coal mines. It includes planning and preparing for the installation and operation of water and gas control equipment; installing and operating water and gas control equipment; and carrying out maintenance and housekeeping.

Application of the Unit

Water and gas control equipment is part of the in-seam directional drilling process in underground coal mining operations. This unit is appropriate for those working in underground in-seam directional driller roles, at worksites within:

- Coal mining
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the installation and operation of water and gas control equipment	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, clarify and apply the ***specific task requirements*** for the installation and operation of water and gas control equipment 1.3. Identify ***workplace hazards***, assess, maintain control and report associated risks in accordance with required procedures 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities for the safe effective and efficient execution of the work 1.5. Prepare and maintain a ***job plan***, in consultation with relevant ***team members***, which makes best use of the available resources and meets the task requirements
2. Prepare for the installation and operation of water and gas control equipment	2.1. Select the appropriate water and gas control equipment to meet the requirements of the ***configuration*** 2.2. Inspect the water and gas control equipment components for serviceability 2.3. Arrange the delivery of all equipment required for the installation and operation of the water and gas control equipment to the worksite 2.4. Ensure that the drill hole is deep enough to house the down-hole components and adjust depth as necessary 2.5. Insert the down-hole components into the standpipe 2.6. Separate the rod string, leaving sufficient distance between the rod clamp and standpipe (or other attachments) to install the stuffing box
3. Install water and gas control equipment	3.1. Install the control valve, applying appropriate ***securing method*** 3.2. Install the 'T' piece, applying appropriate securing method 3.3. Install the stuffing box, applying

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	appropriate securing method 3.4. Pack and secure the seal in accordance with requirements and procedures
4. Operate the water and gas control equipment	4.1. Monitor the water and gas control equipment and ensure its ***correct operation*** 4.2. ***Rectify*** water and gas control equipment operational problems 4.3. ***Isolate*** the water and gas control equipment in the event of line failure 4.4. Apply site environmental controls
5. Carry out maintenance and housekeeping	5.1. Inspect and fault-find all water and gas control equipment 5.2. Remove and replace defective components 5.3. Maintain and leave the work area in a safe, clean and tidy condition 5.4. maintain and complete all reports as required

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to install and operate of water and gas control equipment:

- apply legislative, organisation and site requirements and procedures
- interpret project site geological, hydrological, engineering survey information
- interpret project plans, drawings and specifications
- interpret data and test results
- identify water and gas control equipment components
- interpret drill plans
- interpret water and gas control equipment configuration requirements
- operate ancillary equipment, including:
  - communications equipment,
  - ventilation equipment
  - gas drainage conduits and equipment, and
  - separator tanks
- apply gland packing requirements and procedures
- choose appropriate equipment and fasteners for the installation of water and gas control equipment
- choose appropriate operational techniques for the operation of water and gas control equipment
- calculate quantities for the installation and operation of water and gas control equipment, including:
  - volumes
  - grades
  - percentages
  - resource consumption figures
- determine task resource requirements
- schedule activities and materials delivery
- draft and administer job plans
- implement work zone traffic management plans
- prepare for and conduct briefings, toolbox and site meeting
- prepare job reports
- prepare and maintain log books and diaries
- provide team leadership

Required knowledge

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Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to install and operate of water and gas control equipment:

- applicable geology types
- principles of underground in-seam directional drilling operations
- possible variations in water and gas control equipment required in possible situations
- relevant regulations and codes

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the installation and operating of water and gas control equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the installation and operating of water and gas control equipment • working with others to undertake and complete the installation and operating of water and gas control equipment that meets all of the required outcomes • consistent timely completion of the installation and operating of water and gas control equipment that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation and operating of water and gas control equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Specific task requirements may include:	• configuration of the water and gas control equipment
	• drill plan, which may include:
	  • hole location, dip and direction
	  • hole sizes
	  • site geology
	  • standpipe requirements and configuration

Workplace hazards may include:	• mining equipment • roof and rib spalls • the presence of gases and water
Coordination requirements may include communication with:	• mine operational personnel • mine supervisory and management staff • mine maintenance personnel • drill team members • regulators representatives • visitors
Job plan may include:	• human resource requirements • plant and machinery requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements

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	• quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Team members may include:	• other members of the organisation's management team • suppliers representatives • mine site representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks • members of the team directly involved in the task

Configuration will include:	• standpipe,
	• gate valve,
	• 'T' piece,
	• stuffing box, which may be either:
	  • NQ gauge
	  • HQ gauge
	• four inch hose and
	• gas and water separator
	• and may include:
	• 2 inch, 4 inch, or 6 inch connections

Securing method may include:	• flanged joints, or • victaulic joints
Correct operation will include:	• leaks limited to specification • water flowing from the 'T' piece • water flowing to the fines tank • valves are serviceable • free movement of drill rods
Rectifying operational problems is to include:	• adjusting equipment • tightening fasteners, and • replacing non serviceable items
Isolate is to include:	• withdrawing the drill rods and • shutting off the control valve

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Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB319A Install de-watering conduit and gas drainage equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of de-watering conduit and gas drainage equipment in the coal mining industry. It includes planning and preparing for installation of de-watering conduit and gas drainage equipment; installing de-watering conduit and monitoring water drainage; connecting gas drainage equipment and monitoring gas drainage; and maintaining equipment and housekeeping.

Application of the Unit

De-water conduits and gas drainage equipment is used in underground coal mining operations to de-water and drain gas from coal seams. This unit is appropriate for those working in underground in-seam directional driller roles, at worksites within:

- Coal mining
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for installation of de-watering conduit and gas drainage equipment	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, clarify and apply the ***specific task requirements*** for the installation and operation of water and gas control equipment 1.3. Identify ***workplace hazards***, assess, maintain control and report associated risks in accordance with required procedures 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities for the safe effective and efficient execution of the work 1.5. Prepare the ***de-watering conduit installation plan*** in consultation with the site gas drainage official and in accordance with appropriate site management plans
2. Install de-watering conduit and monitor water drainage	2.1. Insert hollow rods into the hole in accordance with the de-watering conduit installation plan 2.2. Attach non-return valve and anchor onto the de-watering conduit in accordance with the installation plan 2.3. Perforate the conduit at the appropriate locations to allow ingress of water in accordance with the installation plan 2.4. Install the de-watering conduit into hollow rod to the required distance in accordance with the installation plan 2.5. Identify and remedy ***operational problems*** 2.6. Remove hollow rods leaving conduit in place 2.7. Connect conduit to de-watering system and commence removing water via the water trap in accordance with mine-site procedures 2.8. Empty water trap as required by mine-site procedures 2.9. Disconnect de-watering equipment from the de-watering conduit when all water has

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	been removed 2.10. Monitor, record and interpret all pressure and flow readings in accordance with mine-site requirements 2.11. Maintain communication with all ***relevant personnel***
3. Connect gas drainage equipment and monitor gas drainage	3.1. Select and install appropriate gas drainage equipment in accordance with the site gas management plan 3.2. Select and use appropriate measuring equipment to monitor gas drainage in accordance with the site gas management plan 3.3. Correctly identify and tag gas drainage and monitoring units identifying the number, length and diameter of the hole
4. Maintain equipment and housekeeping	4.1. Ensure that the drill rods are inspected for wear and damage and that threads are dressed and greased in accordance with standard procedures or that rods are replace as required 4.2. Monitor all drill equipment and hoses and ***ancillary equipment*** and carryout ***remedial action*** 4.3. Apply health, safety and environmental controls 4.4. Maintain safe and tidy site for the duration and at the conclusion of the job 4.5. Ensure all drilling equipment is cleaned and maintained

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to install de-watering conduit and gas drainage equipment:

- apply legislative, organisation and site requirements and procedures
- apply planning skills
- apply safe manual handling practices
- apply drill rig operating requirements and procedures
- apply operational communication procedures
- apply inspection and monitoring procedures
- apply maintenance procedures
- interpret drill plans
- operate ancillary equipment including communications equipment, computer equipment, pumps, ventilation equipment, separator pods and fluid mixers

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to install de-watering conduit and gas drainage equipment:

- legislative, organisation's and site OHS requirements
- potential underground directional drilling hazards
- potential de-watering and gas drainage operations hazards
- potential work place hazards
- potential underground environmental hazards
- principles of de-watering drill holes and gas drainage
- organisations operational requirements and procedures
- manufacturer's requirements and procedures
- specific handling requirements for dewatering and gas drainage equipment
- housekeeping requirements and procedures
- importance and functions of the standpipe

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the installation of de-watering conduit and gas drainage equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the installation of de-watering conduit and gas drainage equipment • working with others to undertake and complete the installation of de-watering conduit and gas drainage equipment that meets all of the required outcomes • consistent timely completion of the installation of de-watering conduit and gas drainage equipment that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of de-watering conduit and gas drainage equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Specific task requirements may include:	• nature and scope of tasks, • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Workplace hazards may include:	• mining equipment • roof and rib spalls • the presence of gases and water
Coordination requirements may include:	• gas drainage official • drill rig team • operators of other equipment • maintenance personnel • supervisors • mine personnel

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De-watering conduit installation plan may include:	• size and length of the hollow rods • size and length of the conduit • anchor and non-return valve type, location and connection requirements • dewatering locations and perforation requirements
Operational problems may include:	• changing geological formations, particularly clay, rock or unstable or porous formations • loss of air or water volume or pressure • equipment failure • bogging or parting of rod string • reliability of communications
Relevant personnel may include:	• drill crew members • mine staff and supervisors • site safety personnel • statutory persons
Ancillary equipment may include:	• pumps • water disposal lines and • ventilation equipment
Remedial action may include:	• clear or remove obstructions • replace damaged hoses • top-up lubricants

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB320A Construct monitoring bores

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction of monitoring bores in the drilling industry. It includes planning and preparing for constructing monitoring bores, constructing monitoring bores, purging bores, disinfecting/decontaminating bores and drilling equipment, decommissioning test holes, and completing and submitting required reports. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for constructing monitoring bores	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Discuss scope of work with client to gain general agreement on drilling plan, including method of drilling, construction detail and materials to be used, and development requirements 1.3. Apply ***work instructions*** for the allocated task 1.4. Identify, manage and report all potential ***hazards***, including any ***contaminants*** that may be encountered during drilling 1.5. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.6. Regularly communicate up to date information on progress, geology and/or problems encountered, to client and/or other relevant parties
2. Construct monitoring bores	2.1. Use approved procedures to ***assemble and insert casing and screens*** 2.2. Use ***equipment*** for assembly safely and in accordance with approved procedures 2.3. Place artificial pack material in a manner so as to ensure uniform distribution in the annular space without bridging 2.4. Construct bore in accordance with applicable regulations and standard ***bore construction procedures*** 2.5. Demonstrate a ***knowledge of basic geological data*** 2.6. Accurately calculate basic ***numerical tasks*** 2.7. Maintain records accurately and legibly 2.8. Label and secure the well 2.9. Complete a construction diagram showing all details of the construction 2.10. Read and interpret a range of ***documents***, including plans, diagrams and logs to determine the appropriate design for the monitoring well 2.11. Measure and record Standing Water

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	Level
3. Purge bores	3.1. Use development techniques with care to prevent collapsing of casing or screens 3.2. Use a range of development techniques to improve hydraulic transmissivity around the bore
4. Disinfect/decontaminate bore and drilling equipment	4.1. Ensure disinfection/decontamination complies with relevant standards or regulatory requirements 4.2. Handle chemicals in accordance with manufacturer's recommendations 4.3. Use appropriate personal protective equipment
5. Decommission test holes	5.1. Carry out correct procedures for the decommissioning of test holes in any given type of geological formation and hydrological setting 5.2. Verify properly sealed hole for future reference 5.3. Dispose of drill and other fluids safely
6. Complete and submit required reports	6.1. Submit bore log, signed bore completion report and other ***written tasks*** to relevant authorities/client upon completion of the bore 6.2. Log bore holes in accordance with client/regulatory requirements 6.3. Locate bores according to instruction and provide sketches to regulatory authorities

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct monitoring bores:

- apply legislative, organisation and site requirements and procedures for constructing monitoring bores
- interpret and apply occupational health and safety requirements and procedures
- interpret site requirements and procedures
- interpret work requirements
- interpret geological and survey data
- apply mechanical and manual handling safety requirements and procedures
- cementing and grouting skills
- mixing and placing concrete
- drilling skills using an appropriate method
- operation of pressure cleaning equipment
- calculation and measurement skills

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to construct monitoring bores:

- equipment - characteristics, technical capabilities and limitations
- basic geological formations, i.e. various formations which permit groundwater movement and factors affecting groundwater quality
- characteristics of 'good samples' required for water well construction
- ways in which sampling errors can occur
- types of muds, their use, and development techniques to remove them from bores
- problem solving techniques
- grout placement methods and procedures
- range of numerical calculations
- water sampling techniques and protocols
- legislative, site and manufacturer's requirements and procedures
- worksite coordination requirements and procedures
- site operating techniques and systems
- monitoring systems and alarms requirements and procedures
- ground preparation requirements and procedures

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- inspection, fault finding and reporting requirements and procedures
- routine operator servicing, maintenance and housekeeping requirements and procedures
- site environmental and heritage requirements and constraints
- use of diagrams, plans and instructions for positioning, recording work or progress

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for constructing monitoring bores • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of monitoring bore construction • working with others to undertake and complete the construction of monitoring bores that meets all of the required outcomes • consistent timely completion of monitoring bore construction that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction of monitoring bores

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig
Contaminants may include:	• hydrocarbons (MAH's, PAH's) • organic compounds (pesticides) • chlorinated hydrocarbons (dioxins) (PCB) • heavy metals • asbestos • acids • acid sulphate soils
Coordination requirements may	• other equipment operators • maintenance personnel

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include:	• supervisors • site personnel
Assemble and insert casing and screens may involve:	• solvent cement (PVC) • stainless steel screws (PVC) • threaded (PVC, FRP, ABS)
Equipment required for assembly and insertion may include:	• hand tools • power driven (electric, hydraulic or air) hand tools • solvent
Bore construction procedures may include:	• other regulations and standards • ANZECC/NHSMRC Guidelines (for working on contaminated sites) • AWRC Guide to sampling contaminated groundwater • U.S. OSHA Guidelines • organisation's own internal procedures • ARMCANZ "Minimum Construction Requirements for Water Bores in Australia" July 1997
Knowledge of basic geological data may include:	• rock types • aquifer systems • drillability • stability
Numerical tasks may include calculations such as:	• volume (e.g. mud pits, drums, tanks or bore holes of given dimensions) • up hole velocity • cement/water/additives quantities • conversion from imperial to metric and vice versa
Documents to determine design may include:	• results of test hole • hydrogeological data • environmental data • site reports • geological data • old bore hole logs
Written tasks may include:	• daily drill operation report • diagrams • brief descriptions

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Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB325A Construct and complete single aquifer production bores

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction of single aquifer production bores in the drilling industry. It includes planning and preparing for single aquifer production bores, designing production bores for single aquifer systems, constructing production bores in single aquifer systems, developing bores, disinfecting/decontaminating bore and drilling equipment, carrying out bore maintenance and rehabilitation, and decommissioning test/bore holes. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for single aquifer production bores	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Discuss scope of work with client and give technical advice, cost structure, workmanship warranty, quantity and quality of materials, construction standards and methods to be used and gain general agreement on drilling plan 1.3. Obtain, confirm and apply ***work instructions*** for the allocated task 1.4. Obtain or sight any ***licences or permits*** required under the relevant state/territory legislation or regulation 1.5. Identify, manage and report all potential ***hazards*** 1.6. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.7. Communicate regular up to date information on progress, and/or problems encountered to client and/or other relevant parties 1.8. Provide detailed strata logs, pump and development test results conducted during bore development and water and strata samples to the appropriate authorities 1.9. Complete all requirements for bore completion reports, decommissioning or abandonment and send to regulatory authorities within the time specified on bore licence
2. Design production bores for single aquifer systems	2.1. Determine most appropriate construction methods from the reading and interpretation of all available ***documented information*** 2.2. Design the bore to ensure the exclusion of unsuitable surface waters 2.3. Select a bore site that will prevent contamination and minimise interference with other bores and adhere to occupational health and safety requirements 2.4. Determine a drilling fluid program to suit

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	the expected down hole conditions 2.5. Select likely water entry mechanisms from the formation to the bore such as open hole, slotted casing, screens or gravel packs 2.6. Calculate appropriate artificial gravel pack design parameters and recommended annular thickness requirements 2.7. Plot and interpret formation sieve analysis results onto graphs 2.8. Undertake calculations to determine appropriate screen/slot design parameters (i.e. diameter, length, aperture size) 2.9. Select appropriate bore/surface casing type, size, strength and wall thickness for the anticipated ground water quality and pressure conditions and any construction requirements 2.10. Ensure all necessary materials anticipated for the job are available and on site prior to commencement of construction phase
3. Construct production bores in single aquifer systems	3.1. Use approved ***procedures*** to select, slot, assemble, and insert casing and screens suitable for the formations in which they are deployed 3.2. Use ***equipment*** for assembly and slotting safely and in accordance with approved procedures 3.3. Select, mix and place grout or otherwise seal surface casing to whatever depths necessary and with a minimum grout sheath thickness of 20mm to protect bore from surface or shallow subsurface waters that may be contaminated or polluted 3.4. Construct bore in accordance with any applicable regulations, minimum construction requirements and organisational procedures 3.5. Use and maintain drilling fluids and additives within the manufacturer's recommendations and that are non-toxic and capable of being completely removed from the bore upon completion 3.6. Maintain, test and record fluid properties such as viscosity, mid weight, filtration and

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	sand content so that the potential capacity, efficiency and quality of the bore is not affected 3.7. Maintain plumbness and alignment of the hole within the required limitations and perform plumbness tests if required 3.8. Collect, store, record, label and transport formation and water samples for mechanical and/or chemical analysis in accordance with licensing or regulatory requirements 3.9. Maintain all records accurately and legibly 3.10. Accurately calculate hole, annular fill, gravel pack and mud pit volumes in cubic metres or litres 3.11. Select appropriate gravel pack or stabilising gravel fill materials 3.12. Place artificial or stabilising gravel fill if required in a manner that will ensure uniform distribution in the annular space without bridging, voids or segregation 3.13. Comply with relevant workplace occupational health and safety requirements for both the drilling equipment and construction materials 3.14. Maintain tool string inventories 3.15. Identify and protect headworks of the bore 3.16. Construct headworks to seal and cap the bore from surface water pollutants, environmental concerns (e.g. flooding), damage and vandalism 3.17. Incorporate methods for measuring static and pumping water levels in headworks and for adequate sealing when not in use 3.18. Remove drilled fluids from the bore to allow subsequent development 3.19. Dispose of/neutralise wastewater or hazardous materials from site and complete restoration of the bore site and camp facilities 3.20. Maintain tool strings and inventories

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4. Develop bore	4.1. Use ***bore development techniques*** with care to prevent collapsing of casing or screens 4.2. Use development techniques to improve hydraulic transmissivity around the bore 4.3. Undertake development until a continuous, clean supply of water is obtained, in accordance with acceptable and practical limits set by site, contractual or regulatory requirements 4.4. Measure/calculate and record standing and drawdown water levels 4.5. Perform pump and development tests to estimate the sand content and sustainable yield of the bore
5. Disinfect/decontaminate bore and drilling equipment	5.1. Clean and disinfect/decontaminate drilling equipment and tools before working on new sites to comply with relevant standards or regulatory requirements 5.2. Disinfect bores and installed equipment constructed for potable supplies using chlorine or proprietary chemical solution or steam cleaning as appropriate 5.3. Handle hazardous chemicals in accordance with manufacturer's recommendations/instructions and apply appropriate engineering controls and/or personal protective equipment 5.4. Remove and dispose of/neutralise any disinfecting agents from the bore upon completion
6. Carry out bore maintenance and rehabilitation	6.1. Undertake a process of diagnosis to determine likely cause of bore deterioration 6.2. Devise a program of rehabilitation to ensure that the bore is restored to a reasonable condition 6.3. Wear appropriate/recommended personal protective equipment and employ engineering controls when handling hazardous cleaning chemicals and follow manufacturer's recommendations suggested in materials safety data sheets (MSDS)
7. Decommission test/bore holes	7.1. Determine suitable decommissioning procedures and select appropriate materials

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	7.2. Carry out the decommissioning (abandonment) of test holes or bore holes in single aquifer systems 7.3. Verify position/location of hole for future reference 7.4. Dispose of drill and other fluids safely

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to construct single aquifer production bores:

- apply legislative, organisation and site requirements and procedures
- interpret and apply occupational health and safety requirements and procedures
- interpret site requirements and procedures
- interpret work requirements
- interpret geological and survey data
- apply aquifer sand sieve analysis tests
- calculate the specific capacity of a bore
- calculate grout component quantities for small grouting jobs (e.g. plugs)
- calculate hole and annular volumes

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to construct single aquifer production bores:

- equipment characteristics, technical capabilities and limitations
- legal requirements under the relevant state/territory Water Act
- basic geological formations, i.e. basic knowledge of both soil and rock classifications and various formations which permit groundwater movement and factors affecting groundwater quality for aquifer systems, including drillability and stability
- potential safety hazards and sources of contamination when siting a bore
- the necessity of having a signed agreement/contract with the client
- requirements for water sampling for laboratory testing
- tests for alignment and plumbness of bores
- appropriate casing materials for various applications
- applications for wire-wound screens
- casing requirements, slotting techniques, slot location and orientation
- interpretation of sieve analysis results
- applications for natural pack, stabilising fill and artificial pack completion techniques
- objectives of bore development
- test pumping procedures

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- appropriate disinfecting chemicals and procedures
- appropriate headworks design for Class 1 bore applications
- characteristics of 'good samples' required for water well construction
- ways in which sampling errors can occur
- types of drilling fluids, their selection, use, testing and conditioning
- problem solving techniques
- grout placement methods and procedures
- numerical knowledge to calculate:
  - volume (e.g. mud pits, drums, tanks or bore holes of given dimensions, annulus)
  - up hole velocity
  - cement/water/additives quantities
  - screen design parameters
  - flow rates (e.g. L/sec, GPM)
  - conversion from imperial to metric and vice versa
  - conducting a sieve analysis
- relevant occupational health and safety requirements including principles of duty of care
- appropriate fishing operations for the type(s) of drilling being undertaken
- use of materials safety data sheets (MSDS)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for constructing single aquifer production bores • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of single aquifer production bore construction • working with others to undertake and complete the construction of single aquifer production bores that meets all of the required outcomes • consistent timely completion of single aquifer production bore construction that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction of single aquifer production bores

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements

Licenses or permits may include:	• water well licence (Class 1)
	• licence for particular drilling method:
	  • cable tool
	  • auger
	  • rotary air
	  • rotary mud
	  • bore construction permit
	  • bore development/works approval

Hazards may include:	• working in proximity to drilling rig

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Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel • clients and/or landowners
Documented information may include:	• results of test hole • hydrogeological data and reports • geological data • old bore hole logs • results from sieve analysis tests • geophysical logging results • geophysical logs • physical samples • results of mechanical testing of soils • water test analyses • interpretation of soft/hard zones • losses of drilling fluid • bore log and in hole test results/measurements • records of nearby bores • geological maps
Procedures for assembling and inserting casing may include:	• solvent cement (PVC) • stainless steel screws (PVC) • welding (steel) • threaded (PVC, FRP, ABS) • locking strip or wire rope
Equipment may include:	• hand tools • power driven (electric, hydraulic or air) hand tools • casing cutters, bevellers • welders • threaded pipe lifting sockets • solvents
Bore development techniques may include:	• mechanical surging • bailing • chemical methods • jetting • air lift surging and/or pumping • over pumping

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Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB322A Construct multiple aquifer production bores

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction of multiple aquifer production bores in the drilling industry. It includes planning and preparing for multiple aquifer production bores, designing production bores for multiple aquifer systems, constructing production bores in multiple aquifer systems, developing bores, disinfecting/decontaminating bore and drilling equipment, carrying out bore maintenance and rehabilitation, and decommissioning test/bore holes. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for multiple aquifer production bores	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Discuss scope of work with client to gain general agreement on drilling plan 1.3. Obtain, confirm and apply ***work instructions*** for the allocated task 1.4. Obtain or sight any ***licences or permits*** required under the relevant State/Territory legislation or regulation. 1.5. Identify, manage and report all potential ***hazards*** 1.6. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.7. Communicate regular up to date information on progress, and/or problems encountered to client and/or other relevant parties 1.8. Provide detailed strata logs, pump and development test results conducted during bore development and water and strata samples to the appropriate authorities 1.9. Complete all requirements for bore completion reports, decommissioning or abandonment and send to regulatory authorities within the time specified on bore licence
2. Design production bores for multiple aquifer systems	2.1. Determine most appropriate ***construction methods*** from the reading and interpretation of all available ***documented information*** and ensure relevant ***procedures and standards*** are adhered to 2.2. Design the bore to ensure the exclusion of unsuitable waters and to prevent the inter-mixing of aquifers with different water quality or Standing Water Levels 2.3. Select a bore site that will prevent contamination and minimise interference with other bores and that is safe with respect to potential occupational health and safety hazards

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	2.4. Select likely water entry mechanism from the formation to the bore such as open hole, slotted casing screens, gravel packs 2.5. Calculate appropriate artificial pack design parameters and recommended annular thicknesses required 2.6. Undertake calculations to determine appropriate screen design parameters (e.g. diameter, length, aperture size) 2.7. Plot and interpret sieve analysis results onto graphs 2.8. Select appropriate bore/surface casing for the anticipated ground/water quality and pressure conditions and any construction requirements 2.9. Ensure all necessary materials anticipated for the job are available and on site prior to commencement of construction phase
3. Construct production bores in multiple aquifer systems	3.1. Use approved ***procedures to assemble and insert casing and screens*** 3.2. Use ***equipment*** for assembly safely and in accordance with approved procedures 3.3. Grout or otherwise seal surface casing 3.4. Conduct grouting operations to seal intermediate and/or production casing strings or to seal selected zones 3.5. Construct bore in accordance with any applicable regulations, minimum construction and organisational requirements 3.6. Maintain plumbness and alignment of the hole within the required limitations 3.7. Collect, record and label formation and water samples 3.8. Maintain records accurately and legibly 3.9. Accurately calculate hole, annular, fill or pack materials and mud pit volumes in cubic metres or litres 3.10. Select and place stabilising gravel fill as required 3.11. Determine appropriate artificial pack material grain size 3.12. Place artificial pack material in a manner that will ensure uniform

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	distribution in the annular space without bridging 3.13. Comply with relevant workplace occupational health and safety requirements for both the drilling equipment and construction materials 3.14. Maintain tool string inventories 3.15. Identify and protect headworks of the bore 3.16. Construct headworks to seal and cap the bore from surface water pollutants, environmental concerns and damage 3.17. Incorporate methods for measuring static and pumping water levels in headworks and for adequate sealing when not in use 3.18. Dispose of wastewater or hazardous materials from site and complete restoration of the bore site
4. Develop bore	4.1. Use development techniques with care to prevent collapsing of casing or screens 4.2. Use development techniques to improve hydraulic transmissivity around the bore 4.3. Undertake development until a continuous, clean supply of water is obtained, in accordance with site, contractual or regulatory requirements 4.4. Measure/calculate and record standing and drawdown water levels 4.5. Perform tests to estimate the sustainable yield of the bore
5. Disinfect/decontaminate bore and drilling equipment	5.1. Disinfect/decontaminate to comply with relevant standards or regulatory requirements 5.2. Handle hazardous chemicals in accordance with manufacturer's recommendations and any relevant legislative/regulatory requirements
6. Carry out bore maintenance and rehabilitation	6.1. Research all aspects of the bore construction and history 6.2. Undertake a process of diagnosis by testing and measurement to determine likely cause of bore deterioration 6.3. Devise a program of rehabilitation to

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	ensure that the bore is restored to a reasonable condition 6.4. Wear appropriate/recommended personal protective equipment when handling hazardous cleaning chemicals and follow manufacturer's recommendations
7. Decommission test/bore holes	7.1. Determine suitable decommissioning procedures and select appropriate sealing materials and placement methods 7.2. Carry out the decommissioning (abandonment) of test holes or bore holes in single and multiple aquifer systems 7.3. Seal bore with surface caps and cover borecap with 300mm local soil 7.4. Verify position/location of hole for future reference 7.5. Dispose of drill and other fluids safely

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct multiple aquifer production bores:

- apply legislative, organisation and site requirements and procedures for constructing multiple aquifer production bores
- perform aquifer sand sieve analysis tests
- calculate the specific capacity of a bore
- calculate grout component quantities, i.e. cement powder, water and other additives as required
- calculate hole and annular volumes
- calculate grout/mud specific gravity
- determine grain size and selection of appropriate artificial pack material

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to construct multiple aquifer production bores:

- equipment characteristics, technical capabilities and limitations
- legal requirements under the relevant State/Territory Water Act
- basic geological formations, i.e. basic knowledge of both soil and rock classifications and various formations which permit groundwater movement and factors affecting groundwater quality for aquifer systems, including drillability and stability
- potential safety hazards and sources of contamination when siting a bore
- the necessity of having a signed agreement/contract with the client
- requirements for water sampling for laboratory testing
- tests for alignment and plumbness of bores
- appropriate casing materials for various applications
- hole preparation for cementing (grouting) operations
- effects of various cement (grout) additives
- pressure cementing methods
- casing collapse characteristics
- applications for wire-wound screens
- screen design parameters to ensure appropriate entrance velocities
- interpretation of sieve analysis results
- applications for natural pack, stabilising fill and artificial pack completion

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techniques
- objectives of bore development
- test pumping procedures
- appropriate disinfecting chemicals and procedures
- appropriate headworks design for Class 2 bore applications
- characteristics of 'good samples' required for water well construction
- ways in which sampling errors can occur
- types of drilling fluids
- problem solving techniques
- grout placement methods and procedures
- range of numerical calculations to calculate:
  - volume (e.g. mud pits, drums, tanks or bore holes of given dimensions, annulus)
  - up hole velocity
  - cement/water/additives quantities
  - screen design parameters
  - flow rates (e.g. L/sec, GPM)
  - conversion from imperial to metric and vice versa
  - conducting a sieve analysis
- relevant occupational health and safety requirements including principles of Duty of Care
- appropriate fishing operations for the type(s) of drilling being undertaken
- use of materials safety data sheets (MSDS)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for constructing multiple aquifer production bores • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of multiple aquifer production bore construction • working with others to undertake and complete the construction of multiple aquifer production bores that meets all of the required outcomes • consistent timely completion of multiple aquifer production bore construction that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction of multiple aquifer production bores

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Licenses or permits may include:	• Water Well Licence (Class 2) • licence for particular drilling method (e.g. cable tool, auger, rotary air, rotary mud) • bore construction permit • bore development/works approval
Hazards may include:	• working in proximity to drilling rig
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Construction methods may include:	• mechanical surging • bailing • chemical

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	• jetting • air lift • over pumping
Documented information may include:	• results of test hole • hydrogeological data and reports • geological data • old bore hole logs • results from sieve analysis tests • geophysical logs • physical samples • results of mechanical testing of soils • water test analyses • interpretation of soft/hard zones • losses of drilling fluid • bore log and in hole test results/measurements • records of nearby bores • geological maps
Procedures and standards may include:	• Australian standards (e.g. AS 2368 - Test Pumping Water Bores) • ARMCANZ "Minimum Construction Requirements for Water Bores in Australia" July 1997
Procedures to assemble and insert casing and screens may include:	• solvent cement (PVC) • stainless steel screws (PVC) • welding (steel) • threaded (PVC, FRP, ABS) • locking strip or wire rope
Equipment may include:	• hand tools • power driven (electric, hydraulic or air) hand tools • welders • solvents

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIINHB323A Conduct horizontal directional drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting horizontal directional drilling in the civil construction and drilling industries. It includes: planning and preparing for drilling; boring pilot holes; maintaining equipment; and responding to problems.

Application of the Unit

This unit covers horizontal directional drilling such as might be undertaken for long holes or holes under rivers, lagoons etc, or large diameter bores in hard rock or other difficult geology. The directionally drilled hole may subsequently be reamed and have product pipe installed. This unit is appropriate for those working in driller's roles, at worksites within:

- Civil Construction
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for drilling	1.1. Access, interpret and apply ***compliance documentation*** relevant to horizontal directional drilling work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Wear all necessary ***personal protective equipment*** and protective clothing
2. Bore pilot hole	2.1. Select appropriate cutting tool and drilling rig/components 2.2. Confirm that all preliminary and safety checks have been done 2.3. Fit locating device to drill head and attach drill head to drill stem 2.4. Align drilling head with survey tool and survey control system 2.5. Drill pilot hole according to design alignment 2.6. Monitor drill path ensuring pilot hole meets conformance envelope and dogleg severity is within limits 2.7. Add drill stem sections as required 2.8. Steer drill head to achieve required pitch and direction 2.9. Monitor and interpret all gauge/dial readings 2.10. Monitor and interpret drill ***fluid*** return and drill spoil 2.11. Monitor and interpret drill head position and pitch 2.12. Maintain communication with all relevant personnel 2.13. Maintain drill log and reports as required
3. Maintain equipment	3.1. Monitor wear on drill stem, particularly threads

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	3.2. Carry out procedures to ***maintain*** down hole ***equipment*** 3.3. Dress damaged threads or replace drill stem as required 3.4. Check all equipment and hoses 3.5. Monitor wear on drill heads and take required action 3.6. Clean all equipment on completion of bore, ensuring environmental controls are followed 3.7. Ensure drill fluid is appropriately contained/disposed of 3.8. Keep site safe for all possible users for the total duration of the job 3.9. Leave site in a safe and tidy condition which complies with all relevant regulations
4. Respond to problems	4.1. Identify possible ***problems*** in equipment or process 4.2. Determine problems needing action 4.3. Determine possible fault causes 4.4. Rectify problem using appropriate solution within area of responsibility 4.5. Follow through items initiated until final resolution has occurred 4.6. Report problems outside area of responsibility to designated person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct horizontal directional drilling:

- apply legislative, organisation and site requirements and procedures
- apply machine operating techniques
- apply directional drilling equipment operating techniques
- apply ancillary equipment operating techniques, for equipment such as communications equipment, locators and fluid mixers
- maintain down hole equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct horizontal directional drilling:

- basic rock/geology types and their impact on HDD operations
- appropriate drill heads for different geology types
- appropriate back reamers for different geology types
- minimum radius of curvature for drill stem and for different products
- methods of steering or tracking the drill head
- principles of horizontal directional drilling
- types of drill fluid, their uses and make up/adjustment procedures
- relevant state regulations/codes, such as NSW WorkCover *code of practice for excavation* and similar requirements in other states

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting horizontal directional drilling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conducting horizontal directional drilling • working with others to undertake and complete the horizontal directional drilling that meets all of the required outcomes • consistent timely completion of horizontal directional drilling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete horizontal directional drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions, • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• buried utilities in path of bore • electrical strike • spread of contaminants as a result of drilling or cleaning processes • working in proximity to drilling rig • use of high pressure air for drilling operations • entanglement in rotating pipes
Coordination requirements may include:	• drillers assistant operators • maintenance personnel

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	• supervisors • site personnel
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Fluids may include:	• bentonite clay • polymer • combination of clay and polymer mud • pH adjusting agents such as soda ash
Maintenance tasks may include:	• checking threads with thread gauge • dressing threads • lubricating threads and other components • cleaning all equipment and checking for wear and damage • disassembling, cleaning, inspecting and reassembling cutting heads or directional drilling equipment
Equipment can be:	• dual rod directional boring equipment • down hole fluid assisted directional boring equipment • directional down hole hammers • deflection and jetting bits • rotating nozzle water jet drilling equipment • bent sub systems • other down hole cutting tools

Problems may include:	• buried utilities in path of bore, which could include:
	  • electrical power lines (overhead or buried)
	  • gas pipes
	  • water pipes
	  • waste pipes (including stormwater, trade waste and sewerage)
	  • telephone cables
	• electrical strike
	• changing geological formations, particularly cobble, rock or unstable/porous formation
	• drill string sticking
	• drill string breaking
	• fluid breakout (to surface or cavities/services in proximity)

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	• reliable communications with assistant(s) • loss of sensor information • selection of best drill head and back reamer

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB324B Carry out grouting or cementing operations

Modification History

Not applicable.

Unit Descriptor

This unit covers carrying out grouting or cementing operations in the drilling industry. It includes: planning and preparing for the process; performing measurement and calculations; conducting the grouting or cementing of hole; respond to problems; and managing cleaning of all equipment at completion of operations.

Application of the Unit

This unit is appropriate for those working in drillers roles, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the grouting or cementing process	1.1. Access, interpret and apply ***compliance documentation*** relevant to drilling industry ***grouting and cementing*** operations 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work during the grouting or cementing process 1.5. Obtain and use appropriate ***personal protective equipment*** for grouting or cementing operations as listed in the work instructions or materials safety data sheets (MSDS) 1.6. Ensure adequate material and equipment is available to complete the task successfully 1.7. Select the appropriate grouting or cementing procedure to suite the application
2. Perform measurement and calculations	2.1. Read tape measure accurately to carry out measurements of tank capacities, casing or rod lengths as required 2.2. Record or complete tally sheets for number of lengths of casing placed in the hole as required 2.3. Carry out ***calculations and measurements*** 2.4. Record legibly on all reports
3. Conduct grouting or cementing of hole	3.1. Manage mixing grout and any additives as per standard procedures 3.2. Ensure that materials safety data sheets (MSDS) requirements for all materials used are followed 3.3. Conduct grouting or cementing of hole using appropriate equipment and techniques 3.4. Place grout or cement using appropriate techniques 3.5. Monitor process to ensure consistency and accuracy of placed grout or cement

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	3.6. Construct well head, hole identification and install hole security devices if required 3.7. Dispose of any excess grout or cement according to site waste management procedures
4. Respond to problems	4.1. Identify possible ***operational problems*** in equipment or process 4.2. Identify symptoms of problems needing remedial action 4.3. Determine possible fault causes 4.4. Rectify problem using appropriate solution within area of responsibility 4.5. Follow through items initiated until final resolution has occurred 4.6. Report problems outside area of responsibility to designated person
5. Manage cleaning of all equipment at completion of grouting or cementing operations	5.1. Ensure there is no spillage of grout, cement or additives to minimise any associated safety hazards 5.2. Ensure cleaning equipment is used safely and effectively 5.3. Give approved instructions and occupational health and safety requirements on the use of hazardous chemicals for cleaning 5.4. Ensure that all ***cleaning equipment*** is kept in good working condition

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct grouting or cementing operations in the drilling industry:

- apply legislative, organisation and site requirements and procedures
- apply communication procedures
- use mixing equipment
- measure tank dimensions and calculate volumes
- calculate specific gravity of mixtures and hydrostatic pressures including pressure differences between anulus and inside of casing
- record casing lengths and quantities accurately

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct grouting or cementing operations in the drilling industry:

- site and equipment safety requirements
- possible effects of grout, cement or cement additives on health
- environmental requirements and procedures
- team roles and objectives during the grouting or cementing operations
- properties of grout, cement or cement additives
- safe work procedure for the grouting or cementing process

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting grouting or cementing operations in the drilling industry • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of grouting or cementing operations in the drilling industry • working with others to undertake and complete the grouting or cementing operations that meet all of the required outcomes • consistent timely completion of grouting or cementing operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete grouting or cementing operations in the drilling industry

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity, Disability Discrimination legislation
Grouting or cementing application may include:	• securing casing for a production bore (gas, water or hydrothermal) • stabilising walls of drill hole • installing surface casing or standpipe • hole abandonment procedures • blocking sections of the hole
Grouting or cementing techniques may include:	• pressure grouting or cementing • tremie method of placement • placing gout or cement using in socks or sausages • pouring grout or cement down hole

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards

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	• coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• spread of contaminants as a result of the grouting or cementing process or cleaning processes • working in proximity to drilling rig • string makeup and breakout hazards • hazardous chemicals
Coordination requirements may include:	• driller's assistants • other equipment operators • supervisors • mine or client personnel
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Calculations and measurements may include:	• diameters casing, hole • casing volumes • casing quantities and length • hole volumes • tank volumes • annular volumes • component volumes for grouting or cementing • hydrostatic pressures • specific gravity of grout or cement
Operational problems may include:	• loss of grout or cement through walls of hole • casing fracturing or collapsing due to differential hydrostatic pressures • air locks or voids in grout or cement • grout or cement setting too fast • heat damaging casing • grout or cement not setting or being washed away
Cleaning equipment may include:	• pressure cleaning • chemical cleaning • manual cleaning • abrasive mechanical cleaning

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Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB401A Plan and supervise the mobilisation of equipment, crew and materials

Modification History

Not applicable.

Unit Descriptor

This unit covers planning and supervision of the mobilisation of equipment, crew and materials in the drilling industry. It includes planning and preparing for mobilisation, planning hazard control procedures, selecting and sourcing equipment, services and supplies needed, initiating the mobilisation of the job, and monitoring mobilisation (including loading) and responding to problems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for mobilisation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Confirm ***drilling plan*** details with appropriate personnel/client 1.6. Document plan and communicate to relevant people
2. Plan hazard control procedures	2.1. Identify job and site hazards and risks 2.2. Assess the nature, location and scope of hazard and/or risk 2.3. Determine site/job specific procedures for managing hazards and risks 2.4. Confirm hazard control procedures with relevant people 2.5. Document hazard control procedures and communicate to relevant people
3. Select and source equipment, services and supplies needed	3.1. Select appropriate rig(s) and components for the job 3.2. Select supplies, amenities and other consumables required for the job 3.3. Select required support plant/equipment/vehicles for the job and confirm serviceability 3.4. Select crew for the job 3.5. Develop checklists for all required ***equipment***, ***supplies*** and personnel 3.6. Check selections and checklists against agreed plan
4. Initiate the mobilisation of the job	4.1. Appoint/organise for the appointment of the crew 4.2. Induct/organise for the induction of the crew to the job 4.3. Distribute checklists to appropriate people

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	4.4. Confirm availability of all required items 4.5. Confirm maintenance/service has been completed for all equipment/plant 4.6. Clarify job requirements and checklists with recipients of checklists 4.7. Organise/confirm accommodation and finance arrangements
5. Monitor mobilisation (including loading) and respond to problems	5.1. Monitor mobilisation 5.2. Identify possible ***problems*** 5.3. Determine problems needing action 5.4. Determine possible fault causes 5.5. Rectify problem using appropriate solution within area of responsibility 5.6. Report problems outside area of responsibility to designated person 5.7. Follow through items initiated until final resolution has occurred

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to plan and supervise the mobilisation of equipment, crew and materials:

- apply legislative, organisation and site requirements and procedures for planning and supervision of the mobilisation of equipment, crew and materials
- reading and writing
- verbal communication
- team leadership and organisational skills
- report on checklist preparation
- observation skills

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to plan and supervise the mobilisation of equipment, crew and materials:

- geology and its impact on drill requirements
- relative benefits/limitations of different methods of drilling
- relative benefits/limitations of different rigs
- strengths and weaknesses of crews
- heritage and environmental requirements
- budgeting procedures
- equipment selection criteria

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for planning and supervision of the mobilisation of equipment, crew and materials • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of planning and supervision of the mobilisation of equipment, crew and materials • working with others to plan and supervise the mobilisation of equipment, crew and materials • evidence of the consistent successful planning and supervision of the mobilisation of equipment, crew and materials
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the planning and supervision of the mobilisation of equipment, crew and materials
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the planning and supervision of the mobilisation of equipment, crew and materials

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures including:
	  • drilling program
	  • contract
	  • other relevant information
	• manufacturer's guidelines and specifications
	• Australian standards
	• code of practice
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• determination of location and geology of planned drill holes • determination of social, heritage and environmental issues • selection of appropriate drilling method and equipment for job • estimation of likely travel duration/methods for job • estimation of likely duration of job • development/review of budget (dollars, equipment, supplies, consumables, accommodation and people) for job • drafting a plan for the drilling job • nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions

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	• plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig • site hazards (e.g. access and egress) • geological hazards (e.g. unstable formations) • specific hazards (e.g. pressure, hot water, contaminated land)
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Drilling plan may include:	• location of bore(s) • geology of area • preferred method(s) of drilling, drill fluids • equipment, consumables and people required for the job, and the associated dollars • particular issues (e.g. heritage, social, Indigenous and environmental)
Equipment and supplies may include:	• company owned equipment • purchased supplies/tools/small equipment • leased equipment
Problems may include:	• rig/crew unavailable • mobilisation delayed • bad weather

Unit Sector(s)

Drilling (general)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB402A Supervise mineral exploration drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of mineral exploration drilling operations in mining and extractive industries. This includes: planning and preparing for operations; initiating the operations; and monitoring, adjusting, communicating and reporting on the execution of the operations.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for mineral exploration drilling operations	1.1. Access, clarify and ensure the application of the ***requirements and procedures*** relevant to undertaking ***mineral exploration drilling operations***. 1.2. Access, clarify and ensure the application of the specific ***task information*** and ***required outcomes*** relevant to undertaking mineral exploration drilling operations. 1.3. Prepare an ***operational plan*** for the operations which makes best use of the available ***resources*** and for the safe effective and efficient conduct of the operations
2. Initiate mineral exploration drilling operations	2.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the operations 2.2. Issue clear and timely ***instructions*** to ***team members*** and others involved, for the safe, effective and efficient conduct of the operations
3. Monitor, adjust, communicate and report on the execution of mineral exploration drilling operations	3.1. ***Monitor*** the execution of mineral exploration drilling operations 3.2. ***Initiate*** adjustments to ***mineral exploration drilling practice*** or the operations plan to ensure safe, effective and efficient execution of the operations 3.3. Provide advice to team members to overcome ***operational problems*** encountered during the execution of mineral exploration drilling operations 3.4. Ensure plant equipment and tools maintenance requirements are carried out and recorded 3.5. Ensure reports are completed and submitted 3.6. Recommend changes to improve the safety, efficiency and effectiveness of the execution of mineral exploration drilling operations.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. This includes the ability to carry out the following:

- interpreting legislative requirements and procedures
- interpreting organisational requirements and procedures
- interpreting client requirements and procedures
- interpreting manufacturer's requirements and procedures
- interpreting mineral exploration drilling operations project site geological data
- interpreting mineral exploration drilling operations project site geotechnical data
- interpreting mineral exploration drilling operations project site hydrological data
- interpreting mineral exploration drilling operations project engineering survey information
- interpreting mineral exploration drilling operations project plans and drawings
- interpreting mineral exploration drilling operations project specifications
- preparing for and conducting of briefings, toolbox and site meeting
- preparing of short messages
- preparing and presenting of job reports
- preparing and maintaining of log books and diaries
- providing leadership
- applying mineral exploration drilling operations performance monitoring skills
- applying mineral exploration drilling operations troubleshooting skills
- applying mineral exploration drilling operations problem solving skills
- performing calculations for the execution of mineral exploration drilling operations
- providing recommendations for the improvement of the safe, effective and efficient execution of mineral exploration drilling operations

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. Assessment requires evidence of the ability to identify and explain the purpose of:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational safety and health requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures

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- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- mineral exploration drilling operations plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of mineral exploration drilling operations
- potential operational problems in the execution of mineral exploration drilling operations
- mineral exploration drilling operations resource requirements and procedures
- activities scheduling requirements and procedures
- mineral exploration drilling operations materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of mining and extractive industry activities and mineral exploration drilling operations
- team leadership techniques
- works planning techniques
- mineral exploration drilling operations monitoring methods
- engineering survey principles

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the Performance Criteria, Required Skills and Knowledge and the Range Statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions that are to apply in undertaking mineral exploration drilling operations • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of mineral exploration drilling operations • working with others to plan, prepare and execute mineral exploration drilling operations • operational plans which reflect the requirements of these mineral exploration drilling operations and are capable of achieving all of their required outcomes • resource plans which have made available adequate resources for the safe, effective and efficient execution of mineral exploration drilling operations • provision of clear and timely instruction, advice and supervision by the individual of those involved in the undertaking of these mineral exploration drilling operations • evidence of the consistent successful completion of mineral exploration drilling operations under their supervision
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of mineral exploration drilling operations
	  • operational plans which reflect the requirements of mineral exploration drilling operations and are capable of achieving all of their required outcomes
	  • resource plans which have made available adequate resources for the safe, effective and efficient execution of mineral exploration drilling operations

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	• consistent successful completion of mineral exploration drilling operations under their supervision
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and execute mineral exploration drilling operations
	  • supervising and providing clear and timely instruction and advice to those involved in the undertaking mineral exploration drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Requirements and procedures may include:	• legislative • organisational • client • site • manufacturer's ***and may include***: • risk assessment and management requirements and procedures • statutory compliance requirements and procedures • occupational safety and health requirements and procedures • environmental management requirements and procedures • cultural and heritage requirements and procedures • traffic management requirements and procedures • quality requirements and procedures • communication requirements and procedures • procurement requirements and procedures • workplace relations requirements and procedures • contract management requirements and procedures • administration requirements and procedures, including records and reporting • maintenance, servicing, and housekeeping requirements and procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mineral exploration drilling methods may include:	• air drilling • flight auger drilling

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	• large diameter auger drilling • conventional core drilling • wire-line core drilling • mud rotary drilling • cable tool drilling • down-hole hammer drilling • top-hole hammer drilling
Task information may include:	• site geological data • site geotechnical data • site hydrological data • site meteorological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the operations or related tasks • coordination, timing and budgeting requirements
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall operations cost requirements • waste management requirements
Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisations management team • members of the team directly involved in the

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	operations • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related operations
Monitor may include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Initiate may include:	• written communication • oral communications
Mineral exploration drilling operations may include:	• identification of and responding to operational problems • equipment maintenance
Operational problems may include:	• equipment failure • drill string bogging • drill rods breaking • controlling drill hole direction • sample loss • drilling in difficult ground (caving, porous, fractured, reactive, cavities, running sands)

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB403A Supervise geotechnical drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of geotechnical drilling operations in civil construction. This includes: planning and preparing for operations; initiating operations; and monitoring, adjusting, communicating and reporting on the execution of the operations.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for geotechnical drilling operations	1.1. Access, clarify and ensure the application of the ***requirements and procedures*** relevant to undertaking geotechnical drilling operations 1.2. Access, clarify and ensure the application of the specific ***task information*** and ***required outcomes*** relevant to undertaking geotechnical drilling operations. 1.3. Prepare an ***operational plan*** which makes best use of the available ***resources*** and for the safe effective and efficient conduct of the operations
2. Initiate geotechnical drilling operations	2.1. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of the operations 2.2. Issue clear and timely ***instructions*** to ***team members*** and others involved, for the safe, effective and efficient conduct of the operations
3. Monitor, adjust, communicate and report on the execution of geotechnical drilling operations	3.1. ***Monitor*** the execution of geotechnical drilling operations 3.2. ***Initiate*** adjustments to ***geotechnical drilling practice*** or the operational plan to ensure safe, effective and efficient execution of the operations 3.3. Provide advice to team members to overcome ***operational problems*** encountered during the execution of geotechnical drilling operations. 3.4. Ensure plant equipment and tools maintenance requirements are carried out and recorded 3.5. Ensure reports are completed and submitted 3.6. Recommend changes to improve the safety, efficiency and effectiveness of the execution of geotechnical drilling operations.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. This includes the ability to carry out the following:

- interpreting legislative requirements and procedures
- interpreting organisational requirements and procedures
- interpreting client requirements and procedures
- interpreting manufacturer's requirements and procedures
- interpreting geotechnical drilling operations project site geological data
- interpreting geotechnical drilling operations project site geotechnical data
- interpreting geotechnical drilling operations project site hydrological data
- interpreting geotechnical drilling operations project site metrological data
- interpreting geotechnical drilling operations project engineering survey information
- interpreting geotechnical drilling operations project plans and drawings
- interpreting geotechnical drilling operations project specifications
- preparing for and conducting of briefings, toolbox and site meeting
- preparing of short messages
- preparing and presenting of job reports
- preparing and maintaining of log books and diaries
- providing leadership
- applying geotechnical drilling operations performance monitoring skills
- applying geotechnical drilling operations troubleshooting skills
- applying geotechnical drilling operations problem solving skills
- performing calculations for the execution of geotechnical drilling operations
- providing recommendations for the improvement of the safe, effective and efficient execution of geotechnical drilling operations

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. Assessment requires evidence of the ability to identify and explain the purpose of:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational safety and health requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures

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- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- geotechnical drilling operations plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of geotechnical drilling operations
- potential operational problems in the execution of geotechnical drilling operations
- geotechnical drilling operations resource requirements and procedures
- activities scheduling requirements and procedures
- geotechnical drilling operations materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of underground mining and geotechnical drilling operations
- team leadership techniques
- works planning techniques
- geotechnical drilling operations monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the Performance Criteria, Required Skills and Knowledge and the Range Statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions that are to apply in undertaking geotechnical drilling operations • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of geotechnical drilling operations • working with others to plan, prepare and execute geotechnical drilling operations • operational plans which reflects the requirements of these geotechnical drilling operations and are capable of achieving all of their required outcomes • resource plans which have made available adequate resources for the safe, effective and efficient execution of geotechnical drilling operations • provision of clear and timely instruction, advice and supervision by the individual of those involved in the undertaking of these geotechnical drilling operations • evidence of the consistent successful completion of geotechnical drilling operations under their supervision
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge; and
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of geotechnical drilling operations;
	  • job plans which reflects the requirements of geotechnical drilling operations and are capable of achieving all of their required outcomes;
	  • resource plans which have made available adequate resources for the safe, effective and efficient execution of geotechnical

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	drilling operations; and • consistent successful completion of geotechnical drilling operations under their supervision; and • first hand testimonial evidence of the candidate's: • working with others to plan, prepare and execute geotechnical drilling operations; and • supervising and providing clear and timely instruction and advice to those involved in the undertaking geotechnical drilling operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Requirements and procedures may include:	• legislative • organisational • client • site • manufacturer's ***and may include***: • risk assessment and management requirements and procedures • statutory compliance requirements and procedures • occupational safety and health requirements and procedures • environmental management requirements and procedures • cultural and heritage requirements and procedures • traffic management requirements and procedures • quality requirements and procedures • communication requirements and procedures • procurement requirements and procedures • workplace relations requirements and procedures • contract management requirements and procedures • administration requirements and procedures, including records and reporting • maintenance, servicing, and housekeeping requirements and procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geotechnical drilling methods may include:	• air drilling • conventional core drilling

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	• wire-line core drilling • mud rotary drilling • down-hole hammer drilling • top-hole hammer drilling
Task information may include:	• site geological data • site geotechnical data • site hydrological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related tasks • coordination, timing and budgeting requirements
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements
Operational plan may include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements

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	• reporting requirements
Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisations management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Monitor may include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Initiate may include:	• written communication • oral communications
Geotechnical drilling operations practice may include:	• identification of and responding to operational problems • equipment maintenance
Operational problems may include:	• equipment failure • drill string bogging • drill rods breaking • controlling drill hole direction • sample loss • drilling in difficult ground (caving, porous, fractured, reactive, cavities, running sands)

Unit Sector(s)

Drilling (General)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB404A Supervise seismic drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of seismic drilling operations in the resources and infrastructure industries. It includes: planning and preparing for operations; initiating operations; and monitoring, adjusting, communicating and reporting on the execution of the operations.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for seismic drilling operations	1.1. Access, clarify and ensure the application of the ***requirements and procedures*** relevant to undertaking ***seismic drilling operations*** 1.2. Access, clarify and ensure the application of the specific ***task information*** and ***required outcomes*** relevant to undertaking seismic drilling operations 1.3. Prepare an ***operational plan*** which makes best use of the available ***resources*** and for the safe effective and efficient conduct of the operations
2. Initiate seismic drilling operations	2.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the operations 2.2. Issue clear and timely ***instructions*** to ***team members*** and others involved, for the safe, effective and efficient conduct of the operations
3. Monitor, adjust, communicate and report on the execution of seismic drilling operations	3.1. ***Monitor*** the execution of seismic drilling operations 3.2. ***Initiate*** adjustments to ***seismic drilling operations practice*** or the operational plan to ensure safe, effective and efficient execution of the operations 3.3. Provide advice to ***team members*** to overcome ***operational problems*** encountered during the execution of seismic drilling operations 3.4. Ensure plant equipment and tools maintenance requirements are carried out and recorded 3.5. Ensure reports are completed and submitted 3.6. Recommend changes to improve the safety, efficiency and effectiveness of the execution of seismic drilling operations.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. This includes the ability to carry out the following:

- interpreting legislative requirements and procedures
- interpreting organisational requirements and procedures
- interpreting client requirements and procedures
- interpreting manufacturer's requirements and procedures
- interpreting seismic drilling operations project site geological data
- interpreting seismic drilling operations project site geotechnical data
- interpreting seismic drilling operations project site hydrological data
- interpreting seismic drilling operations project site metrological data
- interpreting seismic drilling operations project engineering survey information
- interpreting seismic drilling operations project plans and drawings
- interpreting seismic drilling operations project specifications
- preparing for and conducting of briefings, toolbox and site meeting
- preparing of short messages
- preparing and presenting of job reports
- preparing and maintaining of log books and diaries
- providing leadership
- applying seismic drilling operations performance monitoring skills
- applying seismic drilling operations troubleshooting skills
- applying seismic drilling operations problem solving skills
- performing calculations for the execution of seismic drilling operations
- providing recommendations for the improvement of the safe, effective and efficient execution of seismic drilling operations

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. Assessment requires evidence of the ability to identify and explain the purpose of:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational safety and health requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures

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- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- seismic drilling operations plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of seismic drilling operations
- potential operational problems in the execution of seismic drilling operations
- seismic drilling operations resource requirements and procedures
- activities scheduling requirements and procedures
- seismic drilling operations materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of resources and infrastructure operations and seismic drilling operations
- team leadership techniques
- works planning techniques
- seismic drilling operations monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the Performance Criteria, Required Skills and Knowledge and the Range Statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions that are to apply in undertaking seismic drilling operations • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of seismic drilling operations • working with others to plan, prepare and execute seismic drilling operations • operational plans which reflects the requirements of these seismic drilling operations and are capable of achieving all of their required outcomes • resource plans which have made available adequate resources for the safe, effective and efficient execution of seismic drilling operations • provision of clear and timely instruction, advice and supervision by the individual of those involved in the undertaking of these seismic drilling operations • evidence of the consistent successful completion of seismic drilling operations under their supervision
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of seismic drilling operations;
	  • operational plans which reflects the requirements of seismic drilling operations and are capable of achieving all of their required outcomes
	  • resource plans which have made available adequate resources for the safe, effective and efficient execution of seismic drilling operations

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	• consistent successful completion of seismic drilling operations under their supervision
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and execute seismic drilling operations; and
	  • supervising and providing clear and timely instruction and advice to those involved in the undertaking seismic drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Requirements and procedures may include:	• legislative • organisational • client • site • manufacturers ***and may include***: • risk assessment and management requirements and procedures • statutory compliance requirements and procedures • occupational safety and health requirements and procedures • environmental management requirements and procedures • cultural and heritage requirements and procedures • traffic management requirements and procedures • quality requirements and procedures • communication requirements and procedures • procurement requirements and procedures • workplace relations requirements and procedures • contract management requirements and procedures • administration requirements and procedures, including records and reporting • maintenance, servicing, and housekeeping requirements and procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Seismic drilling methods may include:	• air drilling • mud rotary drilling

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	• down-hole hammer drilling • top-hole hammer drilling
Task information may include:	• site geological data • site geotechnical data • site hydrological data • site meteorological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related • coordination, timing and budgeting requirements
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall operations cost requirements • waste management requirements
Operational plan may include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • operations monitoring requirements • operations performance monitoring requirements • communication requirements

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	• reporting requirements
Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisations management team • members of the team directly involved in the operations • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related operations
Monitor may include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Initiate may include:	• written communication • oral communications
Seismic drilling operations may include:	• identification of and responding to operational problems • equipment maintenance
Operational problems may include:	• keeping hole open to install explosives • equipment failure • drill string bogging • drill rods breaking • drilling in difficult ground (caving, porous, fractured, reactive, cavities, running sands)

Unit Sector(s)

Drilling (General)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB405A Supervise water well drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of water well drilling operations in the drilling industry. It includes: planning and preparing for operations; initiating operations; and monitoring, adjusting, communicating and reporting on the execution of the operations.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for water well drilling operations	1.1. Access, clarify and ensure the application of the ***requirements and procedures*** relevant to undertaking ***water well drilling operations*** 1.2. Access, clarify and ensure the application of the specific ***task information*** and ***required outcomes*** relevant to undertaking water well drilling operations 1.3. Prepare an ***operational plan*** which makes best use of the available ***resources*** and for the safe effective and efficient conduct of the operations
2. Initiate water well drilling operations	2.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the operations 2.2. Issue clear and timely ***instructions*** to ***team members*** and others involved, for the safe, effective and efficient conduct of the operations
3. Monitor, adjust, communicate and report on the execution of water well drilling operations	3.1. ***Monitor*** the execution of water well drilling operations 3.2. ***Initiate*** adjustments to ***water well drilling operations practice*** or the operational plan to ensure safe, effective and efficient execution of the operations 3.3. Provide advice to ***team members*** to overcome ***operational problems*** encountered during the execution of water well drilling operations. 3.4. Ensure plant equipment and tools maintenance requirements are carried out and recorded 3.5. Ensure reports are completed and submitted 3.6. Recommend changes to improve the safety, efficiency and effectiveness of the execution of water well drilling operations.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. This includes the ability to carry out the following:

- interpreting legislative requirements and procedures
- interpreting organisational requirements and procedures
- interpreting client requirements and procedures
- interpreting manufacturer's requirements and procedures
- interpreting water well drilling operations project site geological data
- interpreting water well drilling operations project site geotechnical data
- interpreting water well drilling operations project site hydrological data
- interpreting water well drilling operations project site metrological data
- interpreting water well drilling operations project engineering survey information
- interpreting water well drilling operations project plans and drawings
- interpreting water well drilling operations project specifications
- preparing for and conducting of briefings, toolbox and site meeting
- preparing of short messages
- preparing and presenting of job reports
- preparing and maintaining of log books and diaries
- providing leadership
- applying water well drilling operations performance monitoring skills
- applying water well drilling operations trouble shooting skills
- applying water well drilling operations problem solving skills
- performing calculations for the execution of waterwell drilling operations
- providing recommendations for the improvement of the safe, effective and efficient execution of water well drilling operations

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. Assessment requires evidence of the ability to identify and explain the purpose of:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational safety and health requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures

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- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- water well drilling operations plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of water well drilling operations
- potential operational problems in the execution of water well drilling operations
- water well drilling operations resource requirements and procedures
- activities scheduling requirements and procedures
- water well drilling operations materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of related operations and water well drilling operations
- team leadership techniques
- works planning techniques
- water well drilling operations monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the Performance Criteria, Required Skills and Knowledge and the Range Statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions that are to apply in undertaking water well drilling operations • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of water well drilling operations • working with others to plan, prepare and execute water well drilling operations • operational plans which reflect the requirements of these water well drilling operations and are capable of achieving all of their required outcomes • resource plans which have made available adequate resources for the safe, effective and efficient execution of water well drilling operations • provision of clear and timely instruction, advice and supervision by the individual of those involved in the undertaking of these water well drilling operations • evidence of the consistent successful completion of water well drilling operations under their supervision
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of water well drilling operations
	  • operational plans which reflect the requirements of water well drilling operations and are capable of achieving all of their required outcomes
	  • resource plans which have made available adequate resources for the safe, effective and efficient execution of water well drilling operations

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	consistent successful completion of water well drilling operations under their supervision
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and execute water well drilling operations
	  • supervising and providing clear and timely instruction and advice to those involved in the undertaking water well drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Requirements and procedures may include:	• legislative • organisational • client • site • manufacturer's ***and may include***: • risk assessment and management requirements and procedures • statutory compliance requirements and procedures • occupational safety and health requirements and procedures • environmental management requirements and procedures • cultural and heritage requirements and procedures • traffic management requirements and procedures • quality requirements and procedures • communication requirements and procedures • procurement requirements and procedures • workplace relations requirements and procedures • contract management requirements and procedures • administration requirements and procedures, including records and reporting • maintenance, servicing, and housekeeping requirements and procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Water well drilling methods may include:	• air drilling • mud rotary drilling

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	• cable-tool drilling • continuous flight auger drilling
Task information may include:	• site geological data • site geotechnical data • site hydrological data • site meteorological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related • coordination, timing and budgeting requirements
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall operation cost requirements • waste management requirements
Operational plan may include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • operation monitoring requirements • operation performance monitoring requirements • communication requirements

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	• reporting requirements
Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisations management team • members of the team directly involved in the operation • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related operations
Monitor may include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Initiate may include:	• written communication • oral communications
Water well drilling operations may include:	• single aquifer production bores • multiple aquifer production bores • geothermal bores • monitoring bores • spearpoints • piezometers • artesian bores • identification of and responding to operational problems • equipment maintenance
Operational problems may include:	• keeping hole open to install screens, gravel pack and casing • equipment failure • drill string bogging including differential sticking

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	• drill rods breaking • keeping bore vertical • control of hydrostatic pressures • drilling in difficult ground (caving, porous, fractured, reactive, cavities, clay) • contamination of aquifer • developing bore

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB406A Supervise foundation drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of foundation drilling operations in civil construction. This includes: planning and preparing for operations; initiating operations; and monitoring, adjusting, communicating and reporting on the execution of the operations.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Civil construction
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for foundation drilling operations	1.1. Access, clarify and ensure the application of the ***requirements and procedures*** relevant to undertaking ***foundation drilling operations*** 1.2. Access, clarify and ensure the application of the specific ***task information*** and ***required outcomes*** relevant to undertaking foundation drilling operations 1.3. Prepare an ***operational plan*** which makes best use of the available ***resources*** and for the safe effective and efficient conduct of the operations
2. Initiate foundation drilling operations	2.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the operations 2.2. Issue clear and timely ***instructions*** to ***team members*** and others involved, for the safe, effective and efficient conduct of the operations
3. Monitor, adjust, communicate and report on the execution of foundation drilling operations	3.1. ***Monitor*** the execution of foundation drilling operations 3.2. ***Initiate*** adjustments to ***foundation drilling operations practice*** or the operational plan to ensure safe, effective and efficient execution of the operations 3.3. Provide advice to ***team members*** to overcome ***operational problems*** encountered during the execution of foundation drilling operations. 3.4. Ensure plant equipment and tools maintenance requirements are carried out and recorded 3.5. Ensure reports are completed and submitted 3.6. Recommend changes to improve the safety, efficiency and effectiveness of the execution of foundation drilling operations.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. This includes the ability to carry out the following:

- interpreting legislative requirements and procedures
- interpreting organisational requirements and procedures
- interpreting client requirements and procedures
- interpreting manufacturer's requirements and procedures
- interpreting foundation drilling operations project site geological data
- interpreting foundation drilling operations project site geotechnical data
- interpreting foundation drilling operations project site hydrological data
- interpreting foundation drilling operations project site metrological data
- interpreting foundation drilling operations project engineering survey information
- interpreting foundation drilling operations project plans and drawings
- interpreting foundation drilling operations project specifications
- preparing for and conducting of briefings, toolbox and site meeting
- preparing of short messages
- preparing and presenting of job reports
- preparing and maintaining of log books and diaries
- providing leadership
- applying foundation drilling operations performance monitoring skills
- applying foundation drilling operations troubleshooting skills
- applying foundation drilling operations problem solving skills
- performing calculations for the execution of foundation drilling operations
- providing recommendations for the improvement of the safe, effective and efficient execution of foundation drilling operations

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. Assessment requires evidence of the ability to identify and explain the purpose of:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational safety and health requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures

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- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- foundation drilling operations plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of foundation drilling operations
- potential operational problems in the execution of foundation drilling operations
- foundation drilling operations resource requirements and procedures
- activities scheduling requirements and procedures
- foundation drilling operations materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil construction and foundation drilling operations
- team leadership techniques
- works planning techniques
- foundation drilling operations monitoring methods
- engineering survey principles

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the Performance Criteria, Required Skills and Knowledge and the Range Statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions that are to apply in undertaking foundation drilling operations • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of foundation drilling operations • working with others to plan, prepare and execute foundation drilling operations • operational plans which reflect the requirements of these foundation drilling operations and are capable of achieving all of their required outcomes • resource plans which have made available adequate resources for the safe, effective and efficient execution of foundation drilling operations • provision of clear and timely instruction, advice and supervision by the individual of those involved in the undertaking of these foundation drilling operations • evidence of the consistent successful completion of foundation drilling operations under their supervision
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of foundation drilling operations
	  • operational plans which reflect the requirements of foundation drilling operations and are capable of achieving all of their required outcomes
	  • resource plans which have made available adequate resources for the safe, effective and efficient execution of foundation drilling operations

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	• consistent successful completion of foundation drilling operations under their supervision
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and execute foundation drilling operations
	  • supervising and providing clear and timely instruction and advice to those involved in the undertaking foundation drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Requirements and procedures may include:	• legislative • organisational • client • site • manufacturer's ***and may include***: • risk assessment and management requirements and procedures • statutory compliance requirements and procedures • occupational safety and health requirements and procedures • environmental management requirements and procedures • cultural and heritage requirements and procedures • traffic management requirements and procedures • quality requirements and procedures • communication requirements and procedures • procurement requirements and procedures • workplace relations requirements and procedures • contract management requirements and procedures • administration requirements and procedures, including records and reporting • maintenance, servicing, and housekeeping requirements and procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Foundation drilling methods may include:	• continuous flight auger drilling • large diameter auger drilling

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Task information may include:	• site geological data • site geotechnical data • site hydrological data • site meteorological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related • coordination, timing and budgeting requirements
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall operation cost requirements • waste management requirements
Operational plan may include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • operation monitoring requirements • operation performance monitoring requirements • communication requirements • reporting requirements

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Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisations management team • members of the team directly involved in the operation • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related operations
Monitor may include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Initiate may include:	• written communication • oral communications
Foundation drilling operations practice may include:	• identification of and responding to operational problems • equipment maintenance
Operational problems may include:	• keeping hole open to carry out construction (reinforced concrete) • equipment failure • drill string bogging • controlling drill hole direction • control of hydrostatic pressures • disposal of waste material • drilling in difficult ground (caving, porous, fractured, reactive, cavities, clay)

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Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB407A Supervise horizontal directional drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of horizontal directional drilling operations in the civil construction and drilling industries. This includes: planning and preparing for operations; initiating the operations; and monitoring, adjusting, communicating and reporting on the execution of the operations.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Civil construction
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for horizontal directional drilling operations	1.1. Access, clarify and ensure the application of the ***requirements and procedures*** relevant to undertaking ***horizontal directional drilling operations*** 1.2. Access, clarify and ensure the application of the specific ***task information*** and ***required outcomes*** relevant to undertaking horizontal directional drilling operations 1.3. Prepare an ***operational plan*** which makes best use of the available ***resources*** and for the safe effective and efficient conduct of the operations
2. Initiate horizontal directional drilling operations	2.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the operations 2.2. Issue clear and timely ***instructions*** to ***team members*** and others involved, for the safe, effective and efficient conduct of the operations
3. Monitor, adjust, communicate and report on the execution of horizontal directional drilling operations	3.1. ***Monitor*** the execution of horizontal directional drilling operations 3.2. ***Initiate*** adjustments to ***horizontal directional drilling operations practice*** or the operational plan to ensure safe, effective and efficient execution of the operations 3.3. Provide advice to ***team members*** to overcome ***operational problems*** encountered during the execution of horizontal directional drilling operations. 3.4. Ensure plant equipment and tools maintenance requirements are carried out and recorded 3.5. Ensure reports are completed and submitted 3.6. Recommend changes to improve the safety, efficiency and effectiveness of the execution of horizontal directional drilling operations.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise horizontal directional drilling operations:

- apply legislative, organisation, client and site requirements and procedures
- apply manufacturer's requirements and procedures
- interpret project site geological data
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project site metrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply troubleshooting skills
- apply problem solving skills
- perform calculations for the execution of horizontal directional drilling operations
- provide recommendations for the improvement of the safe, effective and efficient execution of horizontal directional drilling operations

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. This includes knowledge of the following, as required to supervise horizontal directional drilling operations:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational safety and health requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures

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- communication requirements and procedures
- administrative requirements and procedures
- horizontal directional drilling operations plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of horizontal directional drilling operations
- potential operational problems in the execution of horizontal directional drilling operations
- horizontal directional drilling operations resource requirements and procedures
- activities scheduling requirements and procedures
- horizontal directional drilling operations materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil construction and horizontal directional drilling
- team leadership techniques
- works planning techniques
- horizontal directional drilling operations monitoring methods
- engineering survey principles

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the Performance Criteria, Required Skills and Knowledge and the Range Statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions that are to apply in undertaking horizontal directional drilling operations • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of horizontal directional drilling operations • working with others to plan, prepare and execute horizontal directional drilling operations • operational plans which reflect the requirements of these horizontal directional drilling operations and are capable of achieving all of their required outcomes • resource plans which have made available adequate resources for the safe, effective and efficient execution of horizontal directional drilling operations • provision of clear and timely instruction, advice and supervision by the individual of those involved in the undertaking of these horizontal directional drilling operations • evidence of the consistent successful completion of horizontal directional
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of horizontal directional drilling operations
	  • operational plans which reflect the requirements of horizontal directional drilling operations and are capable of achieving all of their required outcomes
	  • resource plans which have made available adequate resources for the safe, effective and efficient execution of horizontal

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	directional drilling operations • consistent successful completion of horizontal directional drilling operations under their supervision • first hand testimonial evidence of the candidate's: • working with others to plan, prepare and execute horizontal directional drilling operations • supervising and providing clear and timely instruction and advice to those involved in the undertaking horizontal directional drilling operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Requirements and procedures may include:	• legislative • organisational • client • site • manufacturer's ***and may include***: • risk assessment and management requirements and procedures • statutory compliance requirements and procedures • occupational safety and health requirements and procedures • environmental management requirements and procedures • cultural and heritage requirements and procedures • traffic management requirements and procedures • quality requirements and procedures • communication requirements and procedures • procurement requirements and procedures • workplace relations requirements and procedures • contract management requirements and procedures • administration requirements and procedures, including records and reporting • maintenance, servicing, and housekeeping requirements and procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Horizontal directional methods may include:	• reaming • installation of product pipes

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	• guided boring • horizontal directional drilling • impact moling, ramming and augering • microtunnelling and pipejacking
Task information may include:	• site geological data • site geotechnical data • site hydrological data • site meteorological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related • coordination, timing and budgeting requirements
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall operation cost requirements • waste management requirements
Operational plan may include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • operation monitoring requirements • operation performance monitoring

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	requirements • communication requirements • reporting requirements • existing services locating requirements
Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services • vacuum liquid waste tank and associated vehicle
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisations management team • members of the team directly involved in the operation • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related operations
Monitor may include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Initiate may include:	• written communication • oral communications
Horizontal directional drilling operations practice may include:	• identification of and responding to operational problems • equipment maintenance • locating existing services
Operational problems may include:	• interfering with existing services • fluid break out • differential sticking of drill string • changing geological formations, particularly clay, rock or unstable or porous formations • drill string breaking

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	• drill rods bending or deforming • loss of signal from down-hole locating tool • equipment failure • keeping hole open to install product pipe • electrocution from buried or overhead power cables • damage and interruption of electrical services • fire, asphyxiation or explosion from gas lines • damage and interruption of gas services • disease from or damage to sewerage pipes • contamination and lung disease from asbestos pipes • damage to telecommunication cables and interruption of services • traffic accidents

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB408A Supervise environmental drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of environmental drilling operations in resources and infrastructure industries. This includes: planning and preparing for operations; initiating the operations; and monitoring, adjusting, communicating and reporting on the execution of the operations.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for environmental drilling operations	1.1. Access, clarify and ensure the application of the ***requirements and procedures*** relevant to undertaking ***environmental drilling operations*** 1.2. Access, clarify and ensure the application of the specific ***task information*** and ***required outcomes*** relevant to undertaking environmental drilling operations 1.3. Prepare an ***operational plan*** which makes best use of the available ***resources*** and for the safe effective and efficient conduct of the operations
2. Initiate environmental drilling operations	2.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the operations 2.2. Issue clear and timely ***instructions*** to ***team members*** and others involved, for the safe, effective and efficient conduct of the operations
3. Monitor, adjust, communicate and report on the execution of environmental drilling operations	3.1. ***Monitor*** the execution of environmental drilling operations 3.2. ***Initiate*** adjustments to ***environmental drilling operations practice*** or the operational plan to ensure safe, effective and efficient execution of the operations 3.3. Provide advice to ***team members*** to overcome ***operational problems*** encountered during the execution of environmental drilling operations. 3.4. Ensure plant equipment and tools maintenance requirements are carried out and recorded 3.5. Ensure reports are completed and submitted 3.6. Recommend changes to improve the safety, efficiency and effectiveness of the execution of environmental drilling operations.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. This includes the ability to carry out the following:

- interpreting legislative requirements and procedures
- interpreting organisational requirements and procedures
- interpreting client requirements and procedures
- interpreting manufacturer's requirements and procedures
- interpreting environmental drilling operations project site geological data
- interpreting environmental drilling operations project site geotechnical data
- interpreting environmental drilling operations project site hydrological data
- interpreting environmental drilling operations project site metrological data
- interpreting environmental drilling operations project engineering survey information
- interpreting environmental drilling operations project plans and drawings
- interpreting environmental drilling operations project specifications
- preparing for and conducting of briefings, toolbox and site meeting
- preparing of short messages
- preparing and presenting of job reports
- preparing and maintaining of log books and diaries
- providing leadership
- applying environmental drilling operations performance monitoring skills
- applying environmental drilling operations troubleshooting skills
- applying environmental drilling operations problem solving skills
- performing calculations for the execution of environmental drilling operations
- providing recommendations for the improvement of the safe, effective and efficient execution of environmental drilling operations

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. Assessment requires evidence of the ability to identify and explain the purpose of:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational safety and health requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures

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- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- environmental drilling operations plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of environmental drilling operations
- potential operational problems in the execution of environmental drilling operations
- environmental drilling operations resource requirements and procedures
- activities scheduling requirements and procedures
- environmental drilling operations materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of resources and infrastructure activities and environmental drilling operations
- team leadership techniques
- works planning techniques
- environmental drilling operations monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the Performance Criteria, Required Skills and Knowledge and the Range Statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions that are to apply in undertaking environmental drilling operations • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of environmental drilling operations • working with others to plan, prepare and execute environmental drilling operations • operational plans which reflect the requirements of these environmental drilling operations and are capable of achieving all of their required outcomes • resource plans which have made available adequate resources for the safe, effective and efficient execution of environmental drilling operations • provision of clear and timely instruction, advice and supervision by the individual of those involved in the undertaking of these environmental drilling operations • evidence of the consistent successful completion of environmental drilling operations under their supervision
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of environmental drilling operations
	  • operational plans which reflect the requirements of environmental drilling operations and are capable of achieving all of their required outcomes
	  • resource plans which have made available adequate resources for the safe, effective and efficient execution of environmental

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	drilling operations • consistent successful completion of environmental drilling operations under their supervision • first hand testimonial evidence of the candidate: • working with others to plan, prepare and execute environmental drilling operations • supervising and providing clear and timely instruction and advice to those involved in the undertaking environmental drilling operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Requirements and procedures may include:	• legislative • organisational • client • site • manufacturer's ***and may include***: • risk assessment and management requirements and procedures • statutory compliance requirements and procedures • occupational safety and health requirements and procedures • environmental management requirements and procedures • cultural and heritage requirements and procedures • traffic management requirements and procedures • quality requirements and procedures • communication requirements and procedures • procurement requirements and procedures • workplace relations requirements and procedures • contract management requirements and procedures • administration requirements and procedures, including records and reporting • maintenance, servicing, and housekeeping requirements and procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Environmental drilling methods may include:	• air drilling • continuous flight auger drilling

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	• large diameter auger drilling • conventional core drilling • wire-line core drilling • mud rotary drilling • monitoring bores
Task information may include:	• site geological data • site geotechnical data • site hydrological data • site meteorological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related • coordination, timing and budgeting requirements
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall operation cost requirements • waste management requirements
Operational plan may include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • operation monitoring requirements

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	• operation performance monitoring requirements • communication requirements • reporting requirements
Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisations management team • members of the team directly involved in the operation • supplier's representatives • sub-contractor's representatives • supervisors or managers of other organisations who are involved in related operations
Monitor may include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Initiate may include:	• written communication • oral communications
Environmental drilling operations may include:	• hole drilling techniques • identification of and responding to operational problems • equipment maintenance
Operational problems may include:	• handling and disposal of contaminated samples or waste • drilling without the aid of drilling fluid additives • keeping hole open to install screens and monitoring equipment • equipment failure • drill string bogging or breaking • drilling in difficult ground (caving, porous,

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	fractured, reactive, cavities, fill material)

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB409A Supervise mineral production and development drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of mineral production and development drilling operations in the mining and extractive industries. This includes: planning and preparing for operations; initiating the operations; and monitoring, adjusting, communicating and reporting on the execution of the operations.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for mineral production and development drilling operations	1.1. Access, clarify and ensure the application of the ***requirements and procedures*** relevant to undertaking ***mineral production and development drilling operations*** 1.2. Access, clarify and ensure the application of the specific ***task information*** and ***required outcomes*** relevant to undertaking mineral production and development drilling operations 1.3. Prepare an ***operational plan*** which makes best use of the available ***resources*** and for the safe effective and efficient conduct of the operations
2. Initiate mineral production and development drilling operations	2.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the operations 2.2. Issue clear and timely ***instructions*** to ***team members*** and others involved, for the safe, effective and efficient conduct of the operations
3. Monitor, adjust, communicate and report on the execution of mineral production and development drilling operations	3.1. ***Monitor*** the execution of mineral production and development drilling operations 3.2. ***Initiate*** adjustments to ***mineral production and development drilling operations practice*** or the operational plan to ensure safe, effective and efficient execution of the operations 3.3. Provide advice to ***team members*** to overcome ***operational problems*** encountered during the execution of mineral production and development drilling operations. 3.4. Ensure plant equipment and tools maintenance requirements are carried out and recorded 3.5. Ensure reports are completed and submitted 3.6. Recommend changes to improve the safety, efficiency and effectiveness of the execution of mineral production and

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	development drilling operations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. This includes the ability to carry out the following:

- interpreting legislative requirements and procedures
- interpreting organisational requirements and procedures
- interpreting client requirements and procedures
- interpreting manufacturer's requirements and procedures
- interpreting project site geological data
- interpreting project site geotechnical data
- interpreting site hydrological data
- interpreting site metrological data
- interpreting project engineering survey information
- interpreting project plans and drawings
- interpreting project specifications
- preparing for and conducting of briefings, toolbox and site meeting
- preparing of short messages
- preparing and presenting of job reports
- preparing and maintaining of log books and diaries
- providing leadership
- applying mineral production and development drilling operations performance monitoring skills
- applying mineral production and development drilling operations troubleshooting skills
- applying mineral production and development drilling operations problem solving skills
- performing calculations for the execution of mineral production and development drilling operations
- providing recommendations for the improvement of the safe, effective and efficient execution of mineral production and development drilling operations

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for their application in the variety of circumstances in which this unit may be applied. Assessment requires evidence of the ability to identify and explain the purpose of:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures

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- occupational safety and health requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- mineral production and development drilling operations plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of mineral production and development drilling operations
- potential operational problems in the execution of mineral production and development drilling operations
- mineral production and development drilling operations resource requirements and procedures
- activities scheduling requirements and procedures
- mineral production and development drilling operations materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of mining and extractive industry activities and mineral production and development drilling operations
- team leadership techniques
- works planning techniques
- mineral production and development drilling operations monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the Performance Criteria, Required Skills and Knowledge and the Range Statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions that are to apply in undertaking mineral production and development drilling operations • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of mineral production and development drilling operations • working with others to plan, prepare and execute mineral production and development drilling operations • operational plans which reflect the requirements of these mineral production and development drilling operations and are capable of achieving all of their required outcomes • resource plans which have made available adequate resources for the safe, effective and efficient execution of mineral production and development drilling operations • provision of clear and timely instruction, advice and supervision by the individual of those involved in the undertaking of these mineral production and development drilling operations • evidence of the consistent successful completion of mineral production and development drilling operations under their supervision
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors,

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	assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes of mineral production and development drilling operations
	  • operational plans which reflect the requirements of mineral production and

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	development drilling operations and are capable of achieving all of their required outcomes • resource plans which have made available adequate resources for the safe, effective and efficient execution of mineral production and development drilling operations • consistent successful completion of mineral production and development drilling operations under their supervision • first hand testimonial evidence of the candidate's: • working with others to plan, prepare and execute mineral production and development drilling operations • supervising and providing clear and timely instruction and advice to those involved in the undertaking mineral production and development drilling operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Requirements and procedures may include:	• legislative • organisational • client • site • manufacturer's ***and may include***: • risk assessment and management requirements and procedures • statutory compliance requirements and procedures • occupational safety and health requirements and procedures • environmental management requirements and procedures • cultural and heritage requirements and procedures • traffic management requirements and procedures • quality requirements and procedures • communication requirements and procedures • procurement requirements and procedures • workplace relations requirements and procedures • contract management requirements and procedures • administration requirements and procedures, including records and reporting • maintenance, servicing, and housekeeping requirements and procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mineral production and development drilling methods	• air drilling • mud rotary drilling

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may include:	• raise boring • down-hole hammer drilling • top-hole hammer drilling
Task information may include:	• site geological data • site geotechnical data • site hydrological data • site meteorological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related • coordination, timing and budgeting requirements
Required outcomes may include:	• task specifications requirements • task drawings requirements • coordination requirements • activity scheduling requirements • unit cost requirements • overall operation cost requirements • waste management requirements
Operational plan may include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • operation monitoring requirements • operation performance monitoring requirements

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	• communication requirements • reporting requirements
Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisations management team • members of the team directly involved in the operation • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related operations
Monitor may include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Initiate may include:	• written communication • oral communications
Mineral production and development drilling operations may include:	• identification of and responding to operational problems • equipment maintenance
Operational problems may include:	• working environment • access to sites • interference from mining operations • controlling effects of operations at different levels of the mine • equipment failure • drill string bogging or breaking • drilling in difficult ground (caving, porous, fractured, reactive, cavities)

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Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB410A Supervise surface directional drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of surface directional drilling operations in the coal and metalliferous mining industries. It includes the requirements for planning, preparing for, initiate, monitor, adjust, communicate and report on the execution of surface directional drilling operations.

Application of the Unit

This unit is applicable for those who perform the duties of:

- acting as a technical specialist in surface directional drilling
- acting as a principal's supervisor of surface directional drilling operations
- acting as a contractor's supervisor of sub-contractors carrying out of surface directional drilling operations
- directly supervising a team or teams carrying out surface directional drilling operations.

Directionally drilled holes may subsequently be reamed and have product pipe installed, or it may be for coal seam methane drainage or similar. This could be at worksites within:

- Coal mining
- Drilling
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, clarify and ensure the application of the specific ***task information*** and ***required outcomes*** 1.3. Prepare an ***operational plan*** which makes best use of the available ***resources*** and for the safe effective and efficient conduct of the operations
2. Initiate operations	2.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the operations 2.2. Issue clear and timely ***instructions*** to ***team members*** and others involved, for the safe, effective and efficient conduct of the operations
3. Monitor, adjust, communicate and report on the operations	3.1. ***Monitor*** the execution of surface directional drilling 3.2. ***Initiate*** adjustments to ***surface directional drilling practice*** or operational plan to ensure safe, effective and efficient execution of the operations 3.3. Provide advice to team members to *overcome**operational problems*** encountered during the execution of surface directional drilling operations 3.4. Ensure plant equipment and tools maintenance requirements are carried out and recorded 3.5. Ensure reports are completed and submitted 3.6. Recommend changes to improve the safety, efficiency and effectiveness of the execution of surface directional drilling operations.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise surface directional drilling operations:

- apply legislative, organisation, site and manufacturer's requirements and procedures surface directional drilling
- apply project site geological data, geotechnical data, hydrological data, engineering survey information
- apply project plans, drawings and specifications
- conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills, troubleshooting skills and problem solving skills
- calculate the following:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures
- interpret materials properties and test results

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise surface directional drilling operations:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- OHS requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures

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- administrative requirements and procedures
- drilling plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques
- potential operational problems
- task resource requirements and procedures
- activities scheduling requirements and procedures
- materials delivery requirements and procedures
- job plan drafting and administration requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of surface mining and directional drilling
- team leadership techniques
- works planning techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of surface directional drilling operations • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of surface directional drilling operations • working with others to plan, prepare and conduct surface directional drilling operations • provision of clear and timely instruction and supervision by the individual of those involved in surface directional drilling operations • evidence of the consistent successful supervision of surface directional drilling operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct surface directional drilling operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the surface directional drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Specifictask information and required outcomes may include:	• site geological data • site geotechnical data • site hydrological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • coordination requirements • activity scheduling requirements • unit cost requirements • overall task cost requirements • waste management requirements • sources of materials • other organisations and contractors involved in the task or related tasks • coordination, timing and budgeting requirements
Operational plan may include:	• human resource requirements • plant and machinery requirements • materials requirements • sub-contractor support requirements • waste disposal requirements • coordination requirements • activity scheduling

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	• materials delivery scheduling • risk assessment and management requirements • OHS requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	• other members of the organisations management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Monitor may include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Initiate may include:	• written communication • oral communication
Surface directional drilling practice may include:	• installation of standpipes • calibration of survey tools • holes drilling techniques • identification of and responding to operational problems • installation of gas drainage equipment and

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	monitoring of gas drainage • installation and operation of stuffing boxes • equipment maintenance
Operational problems may include:	• changing geological formations, particularly clay, rock or unstable or porous formations • loss of air or water volume or pressure • equipment failure • bogging or parting of rod string • loss of signal from down-hole survey tool • reliability of communications

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB411A Construct artesian (flowing) aquifer production bores

Modification History

Not applicable.

Unit Descriptor

This unit covers construction of artesian (flowing) aquifer production bores in the drilling industry. It includes planning and preparing for construction including liaising with client and/or other relevant parties, designing production bores for artesian aquifer systems, constructing production bores in artesian aquifer systems, developing a bore, disinfecting/decontaminating bore and drilling equipment, carrying out bore maintenance and rehabilitation, and decommissioning artesian wells with flowing and/or nonflowing elements. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational or supervisory role or as a technical specialist, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the construction of artesian (flowing) aquifer production bores	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Discuss scope of work with client and give technical advice, cost structure, workmanship warranty, quantity and quality of materials, construction standards and methods to be used and gain general agreement on drilling plan 1.6. Provide detailed strata logs, pump and development test results conducted during ***bore development*** and water and strata samples to the appropriate authorities as required by the relevant State/Territory legislation/licensing agency 1.7. Complete all requirements for bore completion reports, decommissioning or abandonment and send to regulatory authorities within the time specified on bore licence
2. Design production bores for artesian aquifer systems	2.1. Determine most appropriate construction methods from the reading and interpretation of all available ***documented information*** 2.2. ***Design the bore*** to ensure the exclusion of unsuitable waters and to prevent the inter-mixing of aquifers with different water quality and/or Standing Water Levels 2.3. Determine a drilling fluid program to suit the expected down-hole conditions and anticipated pressures 2.4. Select a bore site that will prevent contamination and minimise interference with other bores and that is safe with respect to potential occupational health and safety hazards 2.5. Select likely water entry mechanism from

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	the formation to the bore such as open hole, slotted casing screens, gravel packs 2.6. Calculate appropriate artificial pack design parameters, and recommended annular thicknesses required 2.7. Undertake calculations to determine appropriate screen/slot design parameters (e.g. diameter, length, aperture size) 2.8. Plot and interpret sieve analysis results onto graphs 2.9. Select appropriate bore/surface casing types, size, strength and wall thicknesses for the anticipated ground/water quality and pressure conditions and any construction requirements 2.10. Ensure all necessary materials anticipated for the job are available and on site prior to commencement of construction phase
3. Construct production bores in artesian aquifer systems	3.1. Use approved ***procedures*** to select, slot, assemble and insert casing and screens suitable for the formations in which they are deployed 3.2. Use ***equipment for assembly and slotting*** safely and in accordance with approved procedures 3.3. Select, mix and place grout or otherwise seal surface casing from 10 m into competent impermeable strata and back to the surface with a minimum sheath thickness of 20mm above maximum shoe of coupling joint diameter size 3.4. Conduct grouting operations to seal intermediate and/or inner production casing strings with a 15mm minimum thickness grout sheath or to seal selected zones so that the water from the production bore is drawn from one primary formation only, (unless otherwise allowed by the permit) 3.5. Construct bore in accordance with any applicable regulations, minimum construction requirements and the organisation's internal procedures 3.6. Use and maintain drilling fluids and additives within the manufacturer's

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	recommendations and that are non toxic and capable of complete removal from the bore upon completion 3.7. Maintain, test and record fluid properties such as viscosity, mud weight, filtration and sand content so that the potential capacity, efficiency or quality of the bore is not affected 3.8. Maintain plumbness and alignment of the hole within the required limitations and carry out a plumbness test if required 3.9. Prepare for and recognise symptoms of a formation kick and take action to control the bore 3.10. Collect, store, record, label and transport formation samples in accordance with licensing requirements 3.11. Collect, test, store, record, label and transport water samples for chemical analysis in accordance with licensing requirements 3.12. Maintain all records accurately and legibly 3.13. Arrange for geophysical logging tools to be run in bore if required 3.14. Accurately calculate hole, annular fill or pack materials and mud pit volumes in cubic metres or litres 3.15. Determine aquifer formation grain size distribution from sieve analysis and interpret appropriate gravel pack and screen slot aperture dimensions for gravel packed wells 3.16. Select appropriate gravel pack materials 3.17. Place artificial pack material in a manner that will ensure uniform distribution in the annular space without bridging 3.18. Comply with relevant workplace occupational health and safety requirements for both the drilling equipment and construction materials 3.19. Remove drilling fluids from the bore to allow subsequent development

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	3.20. Maintain tool string inventories 3.21. Construct headworks for the bore including isolation valves to retain/control artesian flow and to permit independent testing of both pressure and flow without interference to reticulation system 3.22. Identify and protect headworks of the bore 3.23. Construct headworks to seal and cap the bore from surface water pollutants, environmental concerns and damage 3.24. Dispose of/neutralise wastewater or hazardous materials from site and complete restoration of the bore site camp facilities
4. Develop bore	4.1. Use development techniques with care to prevent collapsing of casing or screens 4.2. Use development techniques to maintain and improve hydraulic transmissivity around the bore 4.3. Undertake development until a continuous, clean supply of water is obtained, in accordance with acceptable and practical limits set by site, contractual or regulatory requirements 4.4. Measure/calculate and record standing and drawdown water levels 4.5. Perform pump and or development tests to estimate the sand content and sustainable yield of the bore
5. Disinfect/decontaminate bore and drilling equipment	5.1. Disinfect/decontaminate to comply with relevant standards or regulatory requirements 5.2. Handle hazardous chemicals in accordance with manufacturer's recommendations/instructions and any relevant legislative/regulatory requirements
6. Carry out bore maintenance and rehabilitation	6.1. Undertake a process of diagnosis to determine likely cause of bore deterioration 6.2. Devise a program of rehabilitation to ensure that the bore is restored to a reasonable condition 6.3. Wear appropriate/recommended personal protective equipment when handling hazardous cleaning chemicals and follow

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	manufacturer's recommendations
7. Decommission artesian wells with flowing and/or nonflowing elements	7.1. Determine suitable decommissioning procedures and select appropriate materials 7.2. Carry out the decommissioning (abandonment) of artesian aquifer bores, using min 20m long cement plugs sufficient to stem the flow between aquifers both from inside and outside the casing, (slot casing as necessary) or to separate aquifers of differing water quality from each other 7.3. Place cement bridges at the top of the surface casing and at the surface casing shoe 7.4. Verify position/location of hole for future reference 7.5. Dispose of drill and other fluids safely 7.6. Record entire decommissioning procedure and details of bore cementing 7.7. Complete bore completion report and submit to State/Territory Water Authority

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct artesian (flowing) aquifer production bores:

- apply legislative, organisation and site requirements and procedures for supervision of the construction of artesian (flowing) aquifer production bores
- aquifer sand sieve analysis tests
- calculation of the specific capacity of a bore
- calculation of grout component quantities, i.e. cement powder, water and other additives as required
- calculation of hole and annular volumes
- calculation of grout specific gravity
- determination of grain size and selection of appropriate artificial pack material
- calculation of total pressure head for artesian aquifers
- calculation of mud specific gravity to control formation fluid pressure
- use and baryte and or salt to weight drilling fluids
- numerical including calculations such as:
  - volume (e.g. mud pits, drums, tanks or bore holes of given dimensions, annulus)
  - up hole velocity
  - cement/water/additives quantities
  - screen design parameters
  - flow rates (e.g. l/sec, GPM)
  - conversion from imperial to metric and vice versa
  - conducting a sieve analysis
  - required mud weight to control formation fluid pressures
- writing tasks including:
  - state/territory bore completion report
  - daily drill operation report
  - diagrams
  - brief descriptions
  - plotting information on a graph (e.g. plotting results from a sieve analysis)
- reading and interpreting materials including:
  - plans
  - diagrams
  - bore log

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- graphs
- books

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to construct artesian (flowing) aquifer production bores:

- legal requirements under the relevant State/Territory Water Act
- equipment - characteristics, technical capabilities and limitations
- basic geological formations, i.e. basic knowledge of both soil and rock classifications and various formations which permit groundwater movement and factors affecting groundwater quality rock/soil types including:
  - aquifer systems
  - drillability
  - stability
- potential safety hazards and sources of contamination when siting a bore
- the necessity of having a signed agreement/contract with the client
- requirements for water sampling for laboratory testing
- tests for alignment and plumbness of bores
- appropriate casing materials for various applications
- hole preparation for cementing (grouting) operations
- effects of various cement (grout) additives
- pressure cementing methods
- casing collapse characteristics
- applications for wire-wound screens
- screen design parameters to ensure appropriate entrance velocities
- interpretation of sieve analysis results
- applications for natural pack, stabilising fill and artificial pack completion techniques
- objectives of bore development
- test pumping procedures
- flow recession test procedures
- appropriate disinfecting chemicals and procedures
- appropriate headworks design for class 3 bore applications
- characteristics of 'good samples' required for water well construction
- ways in which sampling errors can occur
- types of drilling fluids, their selection, use, testing and conditioning
- problem solving techniques
- grout placement methods and procedures including pressure grouting
- range of numerical calculations
- relevant occupational health and safety requirements including principles of Duty

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of Care • appropriate fishing operations for the type(s) of drilling being undertaken • use of materials safety data sheets (MSDS)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for supervision of the construction of artesian (flowing) aquifer production bores • implementation of requirements, procedures and techniques for the safe, effective and efficient supervision of the construction of artesian (flowing) aquifer production bores • working with others to plan, prepare and conduct supervision of the construction of artesian (flowing) aquifer production bores • evidence of the consistent successful supervision of the construction of artesian (flowing) aquifer production bores
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction of artesian (flowing) aquifer production bores
	  • provision of clear and timely instruction and supervision by the individual of those involved in the construction of artesian (flowing) aquifer production bores

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures
	• manufacturer's guidelines and specifications
	• code of practice
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation
	• licences including:
	  • Water Well licence (Class 3)
	  • Licence for particular drilling method such as:
	• cable tool
	• auger
	• rotary air
	• rotary mud
	• Bore Construction Permit
	• Bore Development/Works Approval
	• Australian standards (e.g. AS 2368 - Test Pumping Water Bores)
	• ARMCANZ *Minimum Construction Requirements for Water Bores in Australia* July 1997

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues

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	• contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig
Coordination requirements may include:	• regular up to date information on progress, and/or problems encountered to client and/or other relevant parties. • other equipment operators • maintenance personnel • supervisors • site personnel
Bore development may include:	• chemical • air lift surging and pumping • over pumping
Documented information may include:	• results of test hole • hydrogeological data and reports • geological data • old bore hole logs • results from sieve analysis tests • geophysical logging results
Design the bore may include:	• geophysical logs • physical samples • results of mechanical testing of soils • water test analyses • interpretation of soft/hard zones • losses of drilling fluid • bore log and in hole test results/measurements • records of nearby bores • geological maps
Procedures may include:	• solvent cement (PVC) • stainless steel screws (PVC) • welding (steel) • threaded (PC, FRP, ABS) • locking strip or wire rope casing joiners
Equipment for assembly and slotting may include:	• hand tools • power driven (electric, hydraulic or air) tools/equipment • casing lifter sockets • pipe cutter and beveller • welder and oxy cutter • solvent

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	• centralisers

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB412B Construct geothermal wells

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction of geothermal wells in the drilling industry. It includes planning and preparing for construction of geothermal wells, designing geothermal wells, constructing geothermal wells, developing the bore, carrying out well maintenance and rehabilitation, and decommissioning test/bore holes. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working as a technical specialist, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the construction of geothermal wells	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Discuss scope of work with client to gain general agreement on drilling plan 1.6. Communicate regular up to date information on progress, and/or problems encountered to client and/or other relevant parties 1.7. Provide details of the completed well to the appropriate authorities as required by the relevant state/territory legislation
2. Design geothermal wells	2.1. Determine most appropriate construction methods from the reading and interpretation of all available ***documented information and local geographic/geological knowledge*** 2.2. Determine a drilling fluid program to suit the expected down-hole conditions and anticipated pressures/temperatures 2.3. Select appropriate bore/surface casing for the anticipated ground conditions and construction techniques 2.4. Ensure all necessary materials anticipated for the job are available and on site prior to commencement of construction phase
3. Construct geothermal wells	3.1. Use approved ***procedures to assemble and insert casing*** 3.2. Use ***equipment for assembly*** safely and in accordance with approved procedures 3.3. Grout or otherwise seal surface casing 3.4. Conduct grouting operations to seal intermediate and/or production casing strings or to seal selected zones 3.5. Construct well in accordance with any

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	applicable regulations, minimum construction requirements and the organisation's internal procedures 3.6. Maintain plumbness and alignment of the hole within the required limitations 3.7. Recognise symptoms of a formation kick and take action to control the well 3.8. Maintain adequate supplies of water on site to quench the well if required 3.9. Collect, record and label formation samples 3.10. Maintain records accurately and legibly 3.11. Accurately calculate hole, annular, grout and mud pit volumes in cubic metres or litres 3.12. Comply with relevant workplace occupational health and safety requirements for both the drilling equipment and construction materials 3.13. Maintain tool string inventories
4. Develop bore	4.1. Use development techniques with care to prevent collapsing of casing or blow outs
5. Carry out well maintenance and rehabilitation	5.1. Undertake a process of diagnosis to determine likely cause of well deterioration 5.2. Devise a program of rehabilitation to ensure that the well is restored to a reasonable condition
6. Decommission test/bore holes	6.1. Determine suitable decommissioning procedures and select appropriate materials 6.2. Carry out the decommissioning (abandonment) of test holes or wells in geothermal systems 6.3. Verify position/location of hole for future reference 6.4. Dispose of drill and other fluids safely

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct geothermal wells:

- apply legislative, organisation and site requirements and procedures
- calculate grout component quantities, i.e. cement powder, water and other additives as required
- calculate hole and annular volumes
- calculate grout specific gravity
- calculate drilling fluid specific gravity to control formation fluid pressure
- use Blow Out Preventers
- apply writing skills to complete a range of documents including:
  - state/territory bore completion report
  - daily drill operation report
  - diagrams
  - brief descriptions
- apply reading and interpreting of materials including:
  - plans
  - diagrams
  - drill log
  - graphs

Note: licences required may include:

- Water Well licence (Class 3)
- Licence for particular drilling method:
  - rotary mud
  - Bore Construction Permit
  - Bore Development/Works Approval

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to construct geothermal wells:

- legal requirements under the relevant state/territory Water Act
- equipment - characteristics, technical capabilities and limitations

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- basic geological formations, i.e. basic knowledge of both soil and rock classifications and various formations which permit groundwater movement and factors affecting groundwater quality, geothermal systems, drillability and stability
- potential safety hazards when siting a well
- the necessity of having a signed agreement/contract with the client
- Blow Out Prevention procedures and techniques
- appropriate casing materials for various applications
- hole preparation for cementing (grouting) operations
- effects of various cement (grout) additives
- pressure cementing methods
- casing collapse characteristics
- appropriate headworks design for geothermal well applications
- types of drilling fluids
- problem solving techniques
- grout placement methods and procedures
- range of numerical calculations including:
  - volume (e.g. mud pits, drums, tanks or wells of given dimensions)
  - up hole velocity
  - cement/water/additives quantities
  - flow rates (e.g. L/sec, GPM)
  - conversion from imperial to metric and vice versa
  - required mud weight to control formation fluid pressures
- relevant occupational health and safety requirements including principles of duty of care
- appropriate fishing operations for the type(s) of drilling being undertaken
- use of materials safety data sheets (MSDS)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the construction of geothermal wells • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the construction of geothermal wells • working with others to plan, prepare and conduct the construction of geothermal wells • evidence of the consistent successful construction of geothermal wells
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction of geothermal wells

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig
Coordination requirements may include:	• discussion of scope of work with client and other relevant parties to gain general agreement on drilling plan, and regular communication about progress, and/or problems encountered • other equipment operators • maintenance personnel • supervisors • site personnel

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Documented information may include:	• results of test hole • geothermal data and reports • geological data • old bore hole logs
Local geographic/geological knowledge may include:	• interpretation of soft/hard zones • losses of drilling fluid
Procedures to assemble and insert casing may include:	• welding (steel)
Equipment for assembly may include:	• hand tools • power driven (electric, hydraulic or air) hand tools • welder

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB413A Supervise underground in-seam directional drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of underground in-seam directional drilling operations in underground coal mines. It includes planning and preparing for and initiating; monitoring, adjusting, communicating and reporting on the execution of underground in-seam directional drilling operations.

Application of the Unit

Underground in-seam directional drilling is undertaken for the purpose of gas extraction and water drainage, barrier proving and exploration. This unit is appropriate for those working in a supervisory role or as a technical specialist at worksites within:

- Coal mining
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for underground in-seam directional drilling operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to undertaking ***underground in-seam directional drilling operations*** 1.2. Access, clarify and ensure the application of the specific ***task information*** and ***required outcomes*** relevant to undertaking underground in-seam directional drilling operations 1.3. Prepare an ***operational plan*** which makes best use of the available ***resources*** and for the safe effective and efficient conduct of the operations
2. Initiate underground in-seam directional drilling operations	2.1. Acquire and make available the necessary resources for the safe, effective and efficient conduct of the operations 2.2. Issue clear and timely ***instructions*** to ***team members*** and others involved, for the safe, effective and efficient conduct of the operations
3. Monitor, adjust, communicate and report on the execution of underground in-seam directional drilling operations	3.1. ***Monitor*** the execution of underground in-seam directional drilling 3.2. ***Initiate*** adjustments to ***underground in-seam directional drilling practice*** or operational plan to ensure safe, effective and efficient execution of the operations 3.3. Provide advice to ***team members*** to overcome ***operational problems*** encountered during the execution of underground in-seam directional drilling operations. 3.4. Ensure plant equipment and tools maintenance requirements are carried out and recorded 3.5. Ensure reports are completed and submitted 3.6. Recommend changes to improve the safety, efficiency and effectiveness of the execution of underground in-seam directional drilling operations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise underground in-seam directional drilling operations:

- apply legislative, organisation and site requirements and procedures
- apply manufacturer's requirements and procedures
- interpret project site geological and hydrological data
- interpret project engineering survey information
- interpret project plans, drawings and specifications
- prepare and conduct of briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply troubleshooting skills
- apply problem solving skills
- calculate quantities for the execution operations, including:
  - volumes
  - grades
  - percentages
  - areas
  - resource consumption figures
- interpreting underground in-seam directional drilling materials properties and test results, including:
  - soil density/moisture relationship
  - plasticity index
  - particle size distribution

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise underground in-seam directional drilling operations:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures

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- occupational safety and health requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- plant and equipment capabilities and application
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution operations
- potential operational problems
- task resource requirements and procedures
- activities scheduling requirements and procedures
- materials delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of coal mining and underground in-seam directional drilling
- team leadership techniques
- works planning techniques
- monitoring methods
- engineering survey principles

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of underground in-seam directional drilling operations • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of underground in-seam directional drilling operations • working with others to plan, prepare and conduct underground in-seam directional drilling operations • provision of clear and timely instruction and supervision by the individual of those involved in underground in-seam directional drilling operations • evidence of the consistent successful underground in-seam directional drilling operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct of underground in-seam directional drilling operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of underground in-seam directional drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Underground in-seam directional drilling methods may include:	• underground in-seam directional drilling • reaming • conventional core drilling • wire-line core drilling • rib consolidation • installation of standpipes • calibration of survey tools • drilling of holes
Specific task information and requirements may include:	• site geological data • site geotechnical data • site hydrological data • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications and drawings • sources of materials • other organisations and contractors involved in the task or related tasks • coordination, timing and budgeting requirements • waste management requirements
Operational plan may include:	• human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements

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	• waste disposal requirements • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources may include:	• labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions may include:	• briefings • handovers • work orders • toolbox meetings • site meetings
Teams members may include:	• other members of the organisations management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Monitor may include:	• ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision
Initiate may include:	• written communication • oral communications
Underground in-seam directional drilling operations	• rib consolidation • installation of standpipes

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may include:	• calibration of survey tools • holes drilling techniques • identification of and responding to operational problems • installation of de-watering conduits and monitoring of water drainage • installation of gas drainage equipment and monitoring of gas drainage • installation and operation of stuffing boxes • equipment maintenance
Operational problems may include:	• changing geological formations, particularly clay, rock or unstable or porous formations • loss of air or water volume or pressure • equipment failure • bogging or parting of rod string • loss of signal from down-hole survey tool • reliability of communications

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIINHB501A Plan drilling

Modification History

Not applicable.

Unit Descriptor

This unit covers the planning of drilling programs in the drilling industry. It includes: liaising with clients and other relevant parties; inspect and researching site for accessibility, services, hazards, legal and environmental problems; selecting appropriate drilling methods, preparing cost estimates, quotes and tenders; arranging permits and licences; designing and organising drilling programs; and preparing occupational health and safety plans for sites.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Liaise with clients and other relevant parties	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Define precise ***scope of work*** expected by client and other ***relevant parties*** 1.3. ***Communicate*** with all parties clearly and concisely to ensure that priorities and special requirements are understood and acted upon 1.4. Negotiate an achievable and acceptable contract with the client within the scope of the driller's ***legal requirements and legal responsibilities*** 1.5. Achieve and document agreement on the drilling plan, by communicating and clarifying intended objectives and contract requirements with all relevant parties 1.6. Develop a time schedule for all operations
2. Inspect/research site for accessibility, services, hazards, legal and environmental problems	2.1. Establish size and nature of intended drill sites and designated routes to reach them 2.2. Assess ***topographical and geological features*** and identify preferred drilling sites 2.3. Locate and interpret specific ***relevant information*** from maps, diagrams or from other data 2.4. Identify legal and environmental limitations, and ***hazards*** applying to site and take appropriate action 2.5. Identify and honour locations of socially or environmentally sensitive areas according to the site agreement 2.6. Check availability and distance of water and/or other local supplies
3. Select appropriate drilling method	3.1. Read and evaluate available data relevant to ground conditions 3.2. Select optimum ***method of drilling and down hole tools***, in consultation with other personnel
4. Prepare cost estimates, quotes and tenders	4.1. Prepare ***data*** for quote listing all necessary activities, materials and sub-contracting services needed

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	4.2. Allow a contingency sum for identifiable but uncertain factors 4.3. Use ***mathematical calculations*** and estimations to determine job costs 4.4. Present quote/tender clearly
5. Arrange permits and licences	5.1. Determine and obtain the required ***permits and licences*** 5.2. Follow correct ***application*** procedures
6. Design and organise drilling program	6.1. Establish action plan to ensure completion of program to client satisfaction, within quality, time and cost parameters 6.2. Communicate scope of work to crew involved in drilling program 6.3. Prepare fieldwork instructions, detailing: project location, access, water supply, aims of project and detailed instructions 6.4. Note variations to scope of work/contractual requirements on log 6.5. Select appropriate and available crew and other resources for the job 6.6. Communicate with crew(s) about job requirements, working conditions and role and responsibilities, clearly and concisely and if ambiguity occurs, immediately clarify 6.7. Establish size and nature of intended drill rig sites, and routes for reaching them 6.8. Specify any access track, clearing or bench construction sizes and compaction required to support rigs and equipment 6.9. Clarify availability of site amenities and back up support 6.10. Decide upon methods of controlling flow off site, disposing of wastes and restoring the site after the operations
7. Prepare OHS plan for site	7.1. Prepare plan to eliminate/mitigate hazards to designated level 7.2. Read and follow signs, hazards and warnings and understand consequences 7.3. Determine and acquire required safety equipment 7.4. Incorporate safety rules and regulations, legislation and specific site instructions

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	7.5. Obtain sign-off on commitment to ***occupational health and safety*** (***OHS***) ***plan*** from crew

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to plan drilling programs:

- apply legislative, organisation and site requirements and procedures
- work in a team
- apply negotiation skills with clients and other parties
- prepare costing, estimations and tenders
- apply metric and imperial conversions
- apply mathematical skills, including: addition, subtraction, multiplication and division
- use project management tools and programs

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to plan drilling programs:

- equipment and characteristics, technical capabilities and limitations
- inspection/research techniques for collection of data:
  - linear measurement
  - angular measurement
  - by manual/electronic means
- communication systems, processes and procedures
- communication documents including maps, geological and topographical data, diagrams
- graphical representation (e.g. maps, diagrams and its uses for interpretation and prediction)
- understanding of special requirements for seam gas drilling
- environmental requirements for drill sites
- OHS planning principles and application

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the planning of drilling programs • implementation of procedures and techniques for the safe, effective and efficient planning of drilling programs • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of planning of drilling programs that best meet the required outcomes • working with others to undertake and complete the planning of drilling programs • consistent successful planning of drilling programs
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the planning of drilling programs
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the planning of drilling programs
	  • provision of clear and timely required

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	support and advice on the implementation of drilling programs
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Scope of work may include:	• tendering/quoting • site inspections • liaising with clients • crew selection/training • purchase/acquisition of equipment
Relevant parties may include:	• landholders • geologists • engineers • drilling crews • government departments • utility providers
Communication may include:	• face to face • telephone • 2-way radio • written documentation • SAT phones
Legal requirements may include:	• environmental protection • groundwater protection • licensing • occupational health and safety
Legal responsibilities may include:	• notice to the licensing body of intention to start work on hole or well, or in certain areas • provision of dates when drilling would be in progress • provision of statutory records and samples by

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	due date
Topographical and geological features may be determined by various methods, including:	• geological and topographical maps • air photos, photogrammetric methods generally • site inspection (foot, 2- or all wheel drive)
Relevant information may include:	• maps (e.g. road, geological and topographical maps, site mud maps) • surveys • written instructions • drawings • reports (e.g. mines reports, geological reports, logs from previous drilling)
Hazards may include:	• electricity wires (underground and overhead) • (pressured) water pipes • telephone lines/cables, fibre optic cables • gas pipes • pipes containing 'other' fluids (e.g. petroleum, stormwater, sewers) • predominant wind direction

Methods of drilling and down hole tools may include:	• cable tool
	• auger:
	  • solid flight
	  • hollow flight
	  • bucket
	  • short flight
	• rotary mud
	• rotary air:
	  • rotary air blast
	  • down hole hammer
	  • reverse circulation hammer
	  • air core
	• vibro core
	• directional drilling
	• coal seam drilling
	• sampling tools - push tubes, core barrels, bits and reamers

Data may include:	• checklists of all activities and material • wastage factors • contingency allowances • schedules of quantities and rates • organisation's procedures for calculating and

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	presenting estimates • inspection of cores or chip samples from earlier drilling programs • bore logs and geological/geotechnical reports

Mathematical calculations may include:	• carrying out addition, subtraction, multiplication, division length
	• using appropriate instruments to measure:
	  • width
	  • height
	  • diameter
	  • weight
	  • angle
	  • temperature
	• using calculator
	• using estimating skills (e.g. mental arithmetic, visualisation of size and quantity)

Permits and licences may include:	• Drillers licence (water well and environmental sectors) • Breathing Apparatus (BA) Certificate • proof of attendance at occupational health and safety course • Bore licence • Exploration licence • Hot work permit • Confined space permit • Permit To Work authority • well control certification
Application for permits and licences may be made with:	• State and Territory governments • Water authorities • Fire department, Mines Rescue Organisations (BA Training) • Environment Protection Authorities (EPAs) • various groundwater consultants • industrial complex on which work is being conducted
Occupational Health and Safety (**OHS**) **plan** may include information, legislation and code of practice including:	• duties and responsibilities • materials safety data sheets (MSDS) • Hazchem registers • maintenance of records of occupational injury and disease • provision of information and training • setting up/working with occupational health

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	and safety committees • emergency response plan

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD201A Assist in maintaining rig safety and emergency procedures

Modification History

Not applicable.

Unit Descriptor

This unit covers assisting in maintaining rig safety and emergency procedures in the drilling industry. It includes planning and preparing for maintaining rig safety and emergency procedures, assisting in securing rigs for cyclones, rig moving or emergencies, participating in fire drills, and demonstrating safe working procedures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for maintaining rig safety and emergency procedures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and ***report*** all potential ***hazards*** and conform to safe ***working practices*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities and ensure ***briefings***/***handover details*** are read/passed on 1.5. Identify developing, emerging and existing ***critical situations*** and take ***actions*** appropriate to the situation 1.6. Activate relevant ***alarms*** in accordance with operational requirements 1.7. Take actions to control and alleviate the situation in accordance with operational and legislative requirements 1.8. Monitor the situation and take relevant actions to minimise risks to personnel, environment, process, plant and equipment. 1.9. Maintain reporting requirements in the event of a critical situation in accordance with ***safety management systems***
2. Assist in securing rig for diverse weather conditions, rig moves or emergencies, as directed	2.1. Identify, analyse, clarify and confirm ***communication*** requirement and act on in accordance with company policies and procedures 2.2. Access, interpret, apply and maintain communication and information systems in a current and accurate state
3. Participate in fire drills	3.1. Recognise, activate and comply with fire alarm signals 3.2. Obtain and wear emergency ***personal protective equipment*** (including breathing apparatus and fear nought suit) as appropriate 3.3. Assist with operation of fire fighting equipment (portable extinguishers and fire

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	hoses and nozzles) according to manufacturer's and site procedures 3.4. Identify and comply with fire team responsibilities and assigned fire station 3.5. Apply boundary cooling procedures and emergency ventilation shutdown procedures, where appropriate 3.6. Follow emergency muster and evacuation procedures if required
4. Demonstrate safe working procedures	4.1. Obtain and wear personal protective equipment, appropriate to task 4.2. Set and pull manual slips correctly 4.3. Operate make-up and break-out manual tongs correctly 4.4. Move drill floor drilling tools and equipment in accordance with company and ***statutory operating procedures***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to assist in maintaining rig safety and emergency procedures:

- apply legislative, organisation and site requirements and procedures for assisting in maintaining rig safety and emergency procedures
- set and pull manual slips
- operate manual make-up tongs
- operate manual break-out tongs
- operate portable extinguishing equipment
- move drills, tools and equipment around drill floor
- wear correct protective clothing for the execution of duties and tasks
- assist in the risk assessment of a manual handling task
- demonstrate correct manual handling technique
- correctly apply and use the permit to work and lock out procedure
- act as chairman of safety meeting
- report regularly to derrickman on equipment condition
- activate alarms
- make announcement on the public address system (PA)
- proceed to muster point
- don emergency gear (e.g. fire suit, life jacket)
- operate specific pieces of fire fighting, life saving and emergency equipment
- follow instructions
- determine wind direction
- assist carrying injured person in stretcher

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to assist in maintaining rig safety and emergency procedures:

- occupational health and safety obligations
- company and statutory guidelines, procedures and practices
- emergency procedures
- permit to work system
- bop, gas and fire alarm signals
- assigned fire station

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- location and use of safety equipment, including fire protection and First Aid
- types of spillages, including flammable, toxic and pollution, and appropriate responses
- types of discharges, including liquids, gases and solids
- types of material, including flammable, toxic, corrosive, explosive and radioactive
- normal drilling operations
- non-routine drilling operations
- man management/rig management
- rig emergency procedures as per station drill
- emergency duties
- location of alarm stations
- identify alarm signals
- life raft launching procedure (where appropriate)
- fire team procedures
- fire, emergency and lifesaving equipment appropriate to the incident
- survival craft boarding procedures (where appropriate)
- location of muster points
- means of evacuation

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting in maintaining rig safety and emergency procedures • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of assisting in maintaining rig safety and emergency procedures • working with others to undertake and complete the maintenance of rig safety and emergency procedures that meets all of the required outcomes • consistent timely completion of assisting with rig safety and emergency procedure maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the maintenance of rig safety and emergency procedures

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Report potential hazards may include:	• oral • written • hazard observation reports • rig safety audits

Hazards may include:	• working in proximity to drilling rig
	• working in different weather conditions including:
	  • extreme heat
	  • extreme cold
	  • wet weather - muddy conditions

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	• dust storms • high winds/cyclone • day/night
Working practices may include:	• individual operation • team operation • use of personal protective equipment • consideration of toxic substances (e.g. H2S) • continuous communication maintained • reacting to on-site emergencies • risk assessment/Job Safety Analysis (JSA)
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel

Briefing/handover details may include:	• toolbox safety meeting
	• task specific - Job Safety Analysis (JSA)
	• pre-tour safety meeting
	• post drill critique
	• safety briefing/induction
	• weekly safety meetings
	• agreed procedures may include but are not limited to:
	  • company
	  • facility
	  • client
	• permit to work
	• work inspection
	• location of potential hazards
	• PTW system

Critical situations may include:	• operational difficulties, equipment/systems failure • extreme weather, poor visibility • equipment failure • leaks • kicks • gas and collision • escape and evacuation • man-overboard (where relevant) • helicopter emergency • oil • general emergency

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	• communications failure • blocked escape routes • loss of chain of command • loss of structural integrity • loss of stability • vessel movement (where relevant) • fire/smoke/explosions • injured personnel • well control
Actions may include:	• make safe • isolate • shutdown • evacuate work area • report • record • contain • rectify • proceed to muster point • follow instructions • prevent escalation • make safe
Alarms may include:	• audible • warning gestures • oral warnings • fixed system specific to installation
Safety management systems may include:	• organisational • installation
Communication may include:	• 2-way radio • intercom • telephone • hand signals • special signals for use with lifeline • public address system • written work instructions
Personal protective equipment may include:	• safety helmet • safety footwear • safety glasses • gloves • riding belt • safety belt • life vest

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	• safety goggles • H2S gas analyser equipment • respirators
Statutory operating procedures may include:	• State Occupational Health and Safety Acts and Regulations • code of practice • Commonwealth Legislation • Australian standards • (PSLA) Petroleum Submerged Lands Act (as relevant) • duty of care • environmental • Station Bill (international requirement) • petroleum regulations

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD202A Carry out equipment and basic rig maintenance

Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of equipment and basic rig maintenance in the drilling industry. It includes planning and preparing for operations, preparing and painting metal surfaces, assisting in the maintenance of materials handling equipment, and preparing and using solvent solutions and rig washes to clean and maintain work areas in non-slippery conditions. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Clarify difficulties in carrying out the instructions with the relevant personnel 1.4. Identify, manage and report all potential ***hazards*** 1.5. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities and ensure ***briefings***/***handover details*** are read/passed on 1.6. Conform to safe working practices and operational requirements 1.7. Confirm availability of necessary auxiliary equipment in accordance with operational requirements
2. Prepare and paint metal surface	2.1. Identify, locate and apply ***personal protective equipment*** 2.2. ***Prepare surface*** using correct ***equipment*** 2.3. Apply rust remover, rust converter and undercoat in accordance with manufacturer's specifications 2.4. Mix epoxy, paracryl or other paints in correct proportions in accordance with manufacturer's specification 2.5. Mask and protect equipment against overspray, where necessary 2.6. Apply finishing coat using brush, roller and spray gun 2.7. Clean equipment in accordance with site requirements
3. Assist in maintenance of materials handling equipment	3.1. Identify faults/potential faults and report immediately 3.2. Identify, record and/or report requirement for repair or ***maintenance*** 3.3. Perform ***periodical maintenance*** on chain blocks and comealongs (where fitted), ensuring equipment is corrosion free,

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	lubricated and operating freely 3.4. Assist with periodical examination of hooks, shackles, slings and strops for defects, correct marking of SWL and ease of operation 3.5. Maintain equipment as directed and in accordance with company and/or manufacturer's specification
4. Prepare and use solvent solutions and rig wash to clean and maintain work areas in non-slippery condition	4.1. Use protective clothing and equipment correctly during handling of solvents 4.2. Apply approved instructions and occupational health and safety requirements on the use of hazardous chemicals for cleaning 4.3. Isolate area being washed or provide warning signs to indicate slippery decks 4.4. Prepare and apply solvent solutions and rig wash in accordance with company and/or manufacturer's specifications to maintain work areas in non-slippery conditions 4.5. Clean equipment correctly and stow on completion 4.6. Clean, preserve and reassess painting equipment in accordance with manufacturer's recommendations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to carry out equipment and basic rig maintenance:

- apply legislative, organisation and site requirements and procedures for carrying out equipment and basic rig maintenance
- report regularly to and work as directed by the driller/derrickman timely and efficiently
- assemble rust scaling equipment
- fit safety pins, where applicable
- wear appropriate protective clothing and equipment
- apply rust treatment undercoat/final coat correctly
- clean and preserve equipment on completion
- conduct pre-operating checks on forklift
- conduct periodic maintenance on chain blocks, comealongs and crane hoists
- examine hooks, shackles, slings, straps and baskets
- keep work area clean
- work within the company safety guidelines, procedures and practices
- use safe operational practices when handling equipment
- assemble surface preparation equipment correctly
- ensure safety pins are in air hose fittings
- wear appropriate protective clothing/equipment
- prepare and paint surfaces
- check, identify and report defects on rigging equipment
- clean decks correctly
- report immediately any malfunction or equipment failure

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to carry out equipment and basic rig maintenance:

- occupational health and safety obligations
- communication methods, including:
  - two-way radio
  - intercom
  - verbal

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- hand signals
- telephone
- public address system
- written work instructions company and statutory guidelines, procedures and practices
- maintenance procedures
- rig maintenance
- normal drilling operations
- non-routine drilling operations
- numerical skills, to calculate measurements, mass, load dimensions and safety working loads
- company equipment maintenance procedures
- surface preparation equipment
- safety pins and air hose fittings
- safe operating procedures and practices
- paint types and applications
- rust treatment
- equipment cleaning and preservation techniques
- chain blocks, comealongs and crane hoist maintenance procedures
- platform cleaning procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for carrying out equipment and basic rig maintenance • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of equipment and basic rig maintenance • working with others to undertake and complete the maintenance of equipment and basic rigs that meets all of the required outcomes • consistent timely completion of equipment and basic rig maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the carrying out of equipment and basic rig maintenance

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • safe working practices • plant and equipment regulations • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • maintenance procedures • policies and procedures • (PSLA) Petroleum Submerged Lands Act • duty of care • petroleum regulations • work schedules • permits to work
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig

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	• working in a variety of conditions including:
	  • day/night
	  • hot/cold
	  • wet/dry
	  • storms - dust, lightning

Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel

Briefing/handover details may include:	• work inspections
	• location of potential hazards
	• completion of maintenance records
	• colour coding for slings and ropes
	• safety briefing/induction
	• pre-tour safety meeting
	• weekly safety meetings
	• Job Safety Analysis (JSA)
	• agreed procedures which may include:
	  • company
	  • facility
	  • client
	• permit to work

Personal protective equipment may include:	• gloves • goggles -sealed protective eyewear • breathing apparatus • hearing protection • correct footwear
Prepare surface may include:	• pneumatic chipping and scaling equipment • hand chipping and scaling equipment • pneumatic or electric wire buffing equipment • hand wire brush
Equipment may include:	• hand chipping and scaling equipment • pneumatic or electric wire buffing equipment • hand wire brush • paint and spraying compressor
Maintenance may include:	• crane hoists • chains • blocks • comealongs
Periodical maintenance may	• hooks

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include:	• shackles • slicks • strops

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD203A Prepare and operate drilling fluid systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation and operation of drilling fluid systems in the drilling industry. It includes planning and preparing for operations, establishing operational requirements, selecting and testing equipment, preparing drilling fluids, pumping drilling fluids, and operating the hopper system. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Conform to ***safe working practices*** and current legislative and operational requirements 1.5. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.6. Obtain personal protective equipment 1.7. Assess geographic layout of the active, reserve and slug pits under work instruction 1.8. Assess operation of mud mixers, dump valves and equalising valves under work instruction 1.9. Identify and locate mud pump and discharge system
2. Establish operational requirements	2.1. Clarify difficulties in carrying out the instructions with the relevant personnel 2.2. Confirm availability and status of necessary permits to work in accordance with operational and legislative requirements 2.3. Confirm availability of necessary third party utilities in accordance with operational requirements 2.4. Confirm availability of required quantities and type of consumables against operational requirements 2.5. Identify errors, omissions and shortages and take appropriate ***remedial action*** within functional responsibility
3. Select and test equipment	3.1. Identify and select ***equipment*** appropriate for the work to be performed and conforming to operational requirements 3.2. Confirm equipment is functional and fit for the purpose and the environment in which it

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	will be used 3.3. Identify defects in the equipment and take appropriate remedial action within functional responsibility
4. Prepare drilling fluids	4.1. Confirm availability of sufficient quantities and types of ***fluids*** against operational requirements 4.2. Confirm tanks and mixing equipment are clean and free from contamination in accordance with instructions 4.3. ***Mix*** and treat fluids in accordance with the specification 4.4. Obtain, correctly label and store samples according to operational requirements 4.5. Identify defects in the equipment and take appropriate remedial action within functional responsibility
5. Pump drilling fluids	5.1. Confirm recording and monitoring devices are preset to required ***parameters*** 5.2. Operate equipment in accordance with operational requirements 5.3. Identify faults and defects accurately and take appropriate remedial action within functional responsibility 5.4. Assist with obtaining samples, weigh, measure viscosity and record details as per instructions 5.5. Operate pipe in the derrick manually and under supervision 5.6. Grease crown block and identify hanging sheaves 5.7. Record data accurately at appropriate times and frequencies in accordance with operational requirements
6. Operate hopper system	6.1. Recognise operation of the hopper system 6.2. Operate and maintain hopper system and associated components in accordance with company and manufacturer's requirements 6.3. Measure and log mud properties correctly 6.4. Recognise, record and report changes in returns of drilling fluid and pit volumes

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to prepare and operate drilling fluid systems:

- apply legislative, organisation and site requirements and procedures for preparation and operation of drilling fluid systems
- maintain and operate mud mixers, dump valves and equalising valves in the mud pits system
- safely add mud materials to the mud systems under the mud engineer's instructions
- operate and maintain all the mud treatment units
- accurately take mud properties readings and legibly record them
- interpret and act on additional flow in the mud returns or an increase in mud pit volume
- operate pipe in derrick as directed either manually or using hydraulic racking system where fitted
- assess need and action greasing of crown block and hanging sheaves

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to prepare and operate drilling fluid systems:

- occupational health and safety obligations
- company and statutory guidelines, procedures and practices
- chemical handling procedures
- operating principles of the systems, equipment and their relationship to other plant
- fluid types and composition
- rig safety and emergency procedures
- safe operating procedures when operating equipment
- layout of mud circulating, mixing and suction systems
- geography of active, reserve and slug pits
- layout of shaker, degasser and settling pits, and sand traps
- materials safety data sheets (MSDS)
- rig maintenance
- non-routine drilling operations
- man management/rig management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for preparing and operating drilling fluid systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of preparation and operation of drilling fluid systems • working with others to undertake and complete the preparation and operation of drilling fluid systems that meets all of the required outcomes • consistent timely completion of preparation and operation of drilling fluid systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the preparation and operation of drilling fluid systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures including: • protective clothing • safe use of hazardous chemicals • (PSLA) Petroleum Submerged Lands Act (where relevant) • duty of care • petroleum regulations • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• pre-tour meeting
	• safety meeting
	• use of hazardous chemicals
	• safety briefing/induction
	• weekly safety meetings
	• Job Safety Analysis (JSA)
	• toolbox
	• permit to work
	• communication through a range of channels including:
	  • 2-way radio
	  • hand signals
	  • Telephone
	  • public address system
	  • written work instructions
	• geographic layout of the active, reserve and slug pits
	• operation of mud mixers, dump valves and equalising valves
	• mud pump and discharge system

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	• reading and interpreting mud materials safety data sheets (MSDS) • layout of shaker pits, degasser pit, settling pit and sand trap

Hazards may include:	• working in proximity to drilling rig
	• working in different conditions including:
	  • wind
	  • rain
	  • snow
	  • dust
	  • hot and cold
	  • calm to severe weather conditions
	  • 24 hour operation

Safe working practices may include:	• use of personal protective equipment • consideration of toxic substances (e.g. H2S) • continuous communication maintained • reacting to on-site emergencies • dealing with contamination
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Remedial action taken to deal with errors, omissions and shortages may include:	• report • record • adjust • repair • isolate
Equipment may include:	• pumps • lines • hoppers • manifolds • shale shakers • degaser • centrifugers • desanders/desilters

Fluids may include:	• Fluid systems including:
	  • mixing
	  • transfer
	  • bulk
	  • circulating

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Mix may include:	• Fluid mix specifications including:
	  • volume
	  • density
	  • viscosity
	  • mud properties

Parameters may include:	• flow rate • pressure • density

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD204A Perform rig floor operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the performance of rig floor operations in the drilling industry. It includes: planning and preparing for rig floor operations, selecting handling equipment, handling tubulars and equipment, preparing and running drill string, preparing, running and cementing casing, preparing, running and cementing casing, running cement stinger assembly (non standard), assisting in preparation and running of blow out prevention (BOP), examining and servicing drill floor equipment, and maintaining a high standard of rig husbandry Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare equipment	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Conform to safe working practices and current legislative and operational requirements 1.5. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.6. Confirm availability of required quantities and type of consumables 1.7. Identify errors, omissions and shortages and take appropriate ***remedial action*** within functional responsibility
2. Select handling equipment	2.1. Identify and select ***equipment*** appropriate for the work to be performed and conforming to operational requirements 2.2. Confirm equipment is functional and fit for the purpose and the environment in which it will be used 2.3. Identify faults in the equipment and take appropriate remedial action taken within functional responsibility
3. Handle tubulars and equipment	3.1. Position ***tubulars*** and equipment according to operational requirements 3.2. Make and break connections safely 3.3. Identify faults and defects accurately and take appropriate remedial action within functional responsibility 3.4. Handle equipment using safe lifting and handling techniques 3.5. ***Record*** data accurately at appropriate times and frequencies
4. Prepare and run drill	4.1. Obtain and wear personal protective equipment, appropriate to task 4.2. Measure and record all down hole tools and pipe to assist driller

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	4.3. Convey pipe and tools to drill floor with protectors fitted and in accordance with company safety operating procedures 4.4. Check tongs and slip dies for cleanliness and sharpness and secure long lines 4.5. Inspect, service and operate manual slips correctly 4.6. Operate make-up and break-out manual tongs correctly 4.7. Move drill floor drilling tools and equipment in accordance with operating procedures 4.8. Apply correct manual handling techniques 4.9. Conduct thread cleaning, inspection and lubrication safely 4.10. Make up and run drill string, applying correct use of chain tongs, safety clamps, rig tongs, slips and elevators
5. Prepare, run and cement casing	5.1. Prepare casing in accordance with rig operating procedures 5.2. Prepare shoe joints in accordance with company and manufacturer's requirements 5.3. Prepare well heads/casing hangers 5.4. Prepare running tools and cementing equipment 5.5. Check lifting appliances, identify and report faults 5.6. Check and prepare handling equipment 5.7. Prepare casing centralisers correctly 5.8. Prepare and install guide frames as required 5.9. Prepare appropriate well control equipment and mitigation control equipment in accordance with site requirements 5.10. Run casing in correct sequence 5.11. Fill casing safely 5.12. Connect appropriate cement line as per company procedure 5.13. Carry out cementing room duties while mixing 5.14. Assist as directed in preparing, running and cementing of cementing casings

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6. Run cement stinger assembly (non-standard)	6.1. Land casing at appropriate joint 6.2. Assemble appropriate equipment to run cement stinger 6.3. Run drill pipe stringer inside casing as per rig specific operating procedure
7. Assist in preparation and running of blow out prevention (BOP) stack, riser and diverter package	7.1. Prepare running BOP equipment in accordance with rig operating procedures 7.2. Position BOP over the wellhead using the appropriate system 7.3. Assemble and check riser running equipment 7.4. Assemble and check appropriate pressure test caps 7.5. Assemble and check appropriate handling equipment 7.6. Assemble and check riser angle beacon and hole positioning equipment
8. Examine and service drill floor equipment	8.1. Read, interpret and apply lubrication schedules 8.2. Carry out lubrication in accordance with company and manufacturer's requirements 8.3. Identify and use correct types and quantities of lubricants for applications 8.4. Check drawworks, rotary table, swivel, all valves, including standpipe and choke and kill valves, wirelines and hoists and identify, report and rectify faults as appropriate
9. Maintain a high standard of rig husbandry	9.1. Maintain drill floor and equipment to company standard 9.2. Keep tools and portable equipment clean, well maintained and correctly stowed 9.3. Seal and stow flammable substances according to manufacturer's and statutory requirements 9.4. Keep covers and gratings in place, except when in use 9.5. Maintain tongs, slips and dies in a clean and sharp condition 9.6. Maintain non skid surfaces clean and free from oil and grease

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to perform rig floor operations:

- apply legislative, organisation and site requirements and procedures for performing rig floor operations
- prepare and run the temporary guide base:
  - correctly babbitt the wire line sockets
  - install the correct shear pins in the wire line sockets and their anchor pins correctly
  - paint and mark the guidelines, the temporary guide base running tool assembly and the temporary guide base guide cone correctly
  - check the temporary guide base running string to ensure that the guide base does not rotate
  - install and run the drill pipe guide frame above the temporary guide base on the running string
- prepare and run drill string:
  - measure and record pipe, sub and tools correctly
  - check the rig tongs and slips
  - check and use a safety clamp
  - service after use hole openers and large size non-sealed bearing bits
- assist as directed in preparing, running and cementing of casing:
  - check the slips, 350 ton elevator slips, elevator and tongs, including power tongs
  - assemble the casing centralisers correctly
  - make up the casing hanger and float or baffle collar correctly
  - make up the cement head sub
  - fill the casing safely and with the required frequency
  - thoroughly clean one mud pit and pre-mix any required mud materials
  - carry out the duties required in the cement room whilst mixing ie. manipulate the cement bulk pod, assist with any required additives, weigh the cement slurry
  - drop the trip dart or, if used, insert the second cement plug
  - switch from cementing unit displacement, e.g. which valves to manipulate when ordered
- prepare and operate pipe handling equipment:
  - check and overhaul the rig tongs and slips

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- check the catheads and chains and operated pipe spinner correctly
- assist in making a conventional drilling connection using correct procedures
- know the additional safety regulations in force whilst flow testing a well
- assist in rigging up the electro-logging sheave cable, and know the patterns and positions of its hanging points
- know the safe practices to be observed when Well Loggers are handling explosives or radioactive materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to perform rig floor operations:

- rig safety and emergency procedures
- company and statutory safety guidelines, procedures and practices
- equipment safe operating procedures
- equipment condition and reporting mechanisms
- function of the triangular mark stamped just above the casing
- what steps are taken if the well kicks whilst running casing
- lubrication techniques
- rig maintenance
- normal drilling operations
- non-routine drilling operations
- man management/rig management
- conversion between metric and imperial
- range of numerical calculations and measurements including:
  - length
  - quantities
  - volumes
  - conversion rates
- well control

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for performing rig floor operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of rig floor operations • working with others to undertake and complete rig floor operations that meets all of the required outcomes • consistent timely completion of rig floor operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency.
	The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete rig floor operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures including:
	  • Occupational Health and Safety Acts and Regulations
	  • Duty of care
	  • Petroleum Act and regulations
	  • PSLA) Petroleum Submerged Lands Act (where relevant)
	• manufacturer's guidelines and specifications
	• Australian standards
	• code of practice
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation
	• relevant permits

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• re-tour safety meetings
	• work inspection
	• task specific - Job Safety Analysis (JSA)
	• permit to work prepared if necessary
	• safety briefing/induction
	• weekly safety meetings
	• toolbox
	• permit to work
	• communication through a range of channels including:
	  • 2-way radio
	  • intercom
	  • hand signals
	  • oral instruction
	  • telephone
	  • public address system
	  • written work instructions
	• reviewing data including:
	  • job instructions

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	• company/manufacturer's safe operating procedures • national standards and code of practice for manual handling • lubrication schedules • labels on hazardous materials • Job Safety Analysis (JSA) • training materials • safe use of equipment including: • safety harness • inertia reels • belts • use of personal protective equipment including: • safety helmet • safety footwear • safety glasses • gloves • riding belt • safety belt • life vest • recognising position of utilities including: • air • fuel • power • cranage • lighting • different working practices including • individual operation • team operation • use of personal protective equipment • consideration of toxic substances (e.g. H2S) • continuous communication maintained • reacting to on-site emergencies
Hazards may include:	• working in proximity to drilling rig • working in a range of weather conditions including: • day/night • dry/wet • hot/cold • storms/lightning (dust storms/wind)

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Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Remedial action taken to deal with errors, omissions and shortages may include:	• report • record • rectify • replace • repair • adjust
Record of information may include:	• tubulars and equipment • faults and defects • downhole tools and pipe measurements • quantities of lubricants used
Equipment may include:	• bopis • bushings • casing running tools • casing stabbing basket/platform • catheads • cementing hose • consumables - dope/rope • diverter • down hole • drill pipe • elevators - manual/automatic • handling • hoisting/lifting equipment • job specific tools • pipe racking • riser • running tools • slips - manual/power • stinger running equipment • temporary guide bases (TGB/PGB) • tongs - manual/power • well control equipment • wellheads • winches • winches
Tubulars may include:	• drill pipe • drill collars

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	• casing - 20", 133/8", 93/8", 7" and 5½" • tubing • riser

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD205A Support blow out prevention operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supporting of blow out prevention operations in the drilling industry. It includes planning and preparing for operations, assisting with well BOP operations, monitoring and reporting safety issues.

Application of the Unit

This unit is appropriate for those working in operational support roles in coal-seam methane gas drilling operations, at worksites within:

- Coal Mining
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Assist with well BOP operations	2.1. Assist with ***well kill activities*** 2.2. Monitor and report BOP equipment status 2.3. Isolate BOP system accumulator 2.4. Monitor and adjust chokes and manifolds as directed 2.5. Assist with emergency shutdown procedures 2.6. Participate in emergency ***drills and exercises*** 2.7. ***Communicate*** operational activities and information to other crew during BOP operations
3. Monitor and report safety issues	3.1. Identify, address and report ***hazards*** associated with blow out prevention 3.2. Recognise ***kick indicators*** and advise Driller during operations 3.3. Identify and report ***ignition sources*** 3.4. Identify and report sources and presence of ***flammable gases and emissions*** 3.5. Identify and report BOP malfunctions

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to support blow out prevention operations:

- apply legislative, organisation and site requirements and procedures
- working in a team
- apply kick warning signs and indicators detecting procedures
- apply work instruction and procedure interpretation skills
- apply process status recording and reporting processes

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to support blow out prevention operations:

- the principles and practices of coal seam gas control
- coal seam gas control procedures
- risks and their controls related to coal seam gas control
- BOP annular equipment operating principles
- BOP control system principles
- operating principles of chokes and manifolds
- kill principles and methods
- sources of ignition and their dangers and controls
- sources of flammable gases and emissions and their dangers and controls
- kick detection warnings and indications and the responses to them
- purpose, type and conduct of coal seam gas control emergency drills and exercises
- communication methods and protocols

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for supporting blow out prevention operations • implementation of requirements, procedures and techniques for the safe, effective and efficient support of blow out prevention operations • working with others to undertake and complete the blow out prevention operations that meets all of the required outcomes • consistent timely provision of support of blow out prevention operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the blow out prevention operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Coordination requirements may include	• drill team • other equipment operators • maintenance personnel • supervisors • worksite personnel
Well kill methods may include:	• bringing pump up to kill speed • maintaining constant bottom hole pressure • shutting down the kill operation while maintaining a constant bottom hole pressure

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	• controlling the influx using the Driller's Method
Drills and exercises may include:	• pit drill • trip drill • abandonment drill • evacuation
Communications may include:	• 2-way radio • hand signals • telephone • public address system • written work instructions
Hazards may include:	• blow out gas to surface • ignition of gas • toxic gases • pressurised coal seam gas system
Kick indicators may include:	• flow from wells (pump off) • increase in flow from well (pumps on) • pit volume gain

Ignition sources may include:	• non-explosion protected devices such as:
	  • electrical connections/leads
	  • rig lights and wiring
	  • flashlights
	  • computers
	  • mobile phones
	  • electronic car keys
	  • charging circuits from solar panels
	  • charging and starting circuits from vehicles
	  • drill rigs
	  • mud pumps
	  • lighting plants
	  • auxiliary equipment
	• static discharge - lightning
	• flare stacks
	• engine exhausts from vehicles, drill rigs, auxiliary equipment

Flammable gases and emissions may include:	• methane (CH4) • hydrogen sulphide (H2S) • carbon dioxide (CO2) • carbon monoxide (CO)

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Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD206A Assist with coal seam gas control

Modification History

Not applicable.

Unit Descriptor

This unit covers assisting with coal seam gas control in the drilling industry. It includes planning and preparing for and assisting with coal seam gas control activities, and monitoring and reporting safety issues.

Application of the Unit

This unit is appropriate for those working in a operational roles in coal-seam methane gas drilling operations, at worksites within:

- Coal Mining
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for assisting with coal seam gas control	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Assist with coal seam gas control activities	2.1. Monitor flows and returns for correct volumes and rates, and report inconsistencies to Driller 2.2. Assist in operation of coal seam gas control pumps 2.3. Read and interpret ***measuring devices*** to monitor correct operation of coal seam gas control process and equipment 2.4. ***Communicate*** operational activities and information to other crew during coal seam gas control operations 2.5. Assist in installation and maintenance of equipment 2.6. Participate in emergency ***drills and exercises***
3. Monitor and report safety issues	3.1. Identify, address and report ***hazards*** associated with coal seam gas control under varying ***working conditions*** 3.2. Recognise ***kick indicators*** and advise Driller during coal seam gas control operations 3.3. Identify and report ***ignition sources*** 3.4. Identify and report sources and presence of ***flammable gases and emissions*** 3.5. Identify and report running ***coal seam gas control equipment*** malfunctions

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to assist with coal seam gas control:

- apply legislative, organisation and site requirements and procedures
- work in a team
- apply gauge and graph interpreting skills
- apply work instruction and procedures interpreting skills
- apply process status recording and reporting procedures
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to assist with coal seam gas control:

- the principles and practices of coal seam gas control
- control procedures
- risks and their controls
- sources of ignition and their dangers and controls
- sources of flammable gases and emissions and their dangers and controls
- pumping systems principles
- purpose, operation and interpretation of measuring and testing devices
- kick detection warnings and indications and the responses to them
- purpose, type and conduct of emergency drills and exercises
- communication methods and protocols

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting with coal seam gas control • implementation of requirements, procedures and techniques for the safe, effective and efficient assisting with coal seam gas control • working with others to undertake and complete coal seam gas control that meets all of the required outcomes • consistent timely provision of assistance with coal seam gas control that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the coal seam gas control

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Coordination requirements may include	• drill team • other equipment operators • maintenance personnel • supervisors • worksite personnel
Measuring devices may include:	• 2-way radio • hand signals • telephone • public address system

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	• written work instructions
Drills and exercises may include:	• pit drill • trip drill • abandonment drill • evacuation
Hazards **may include**:	• blow out gas to surface • ignition of gas • toxic gases • pressurised coal seam gas system
Working conditions may include:	• night time operations • day time operations • hot climates • cold climates • snow • wet weather conditions • high wind
Kick indicators may include:	• flow from wells (pump off) • increase in flow from well (pumps on) • pit volume gain

Ignition sources may include:	• non-explosion protected devices such as:
	  • electrical connections/leads
	  • rig lights and wiring
	  • flashlights
	  • computers
	  • mobile phones
	  • electronic car keys
	  • charging circuits from solar panels
	  • charging and starting circuits from vehicles
	  • drill rigs
	  • mud pumps
	  • lighting plants
	  • auxiliary equipment
	• static discharge - lightning
	• flare stacks
	• engine exhausts from vehicles, drill rigs, auxiliary equipment

Flammable gases and emissions may include:	• methane (CH_4) • hydrogen sulphide (H_2S) • carbon dioxide (CO_2) • carbon monoxide (CO)

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Coal seam gas control equipment may include:	• mud system • blooie diverter lines • auxiliary equipment • pressure measuring devices • gas detection equipment and devices • diverters

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD209A Operate and maintain ancillary equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation and maintenance of ancillary equipment in the drilling industry. It includes planning and preparing for operating and maintaining ancillary equipment, maintaining pumps, operating, maintaining and repairing gate valves associated with the mud system, and operating and maintaining chemical mixing pumps and equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operating and maintaining ancillary equipment	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** in compliance with ***statutory requirements*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities and ensure ***briefings***/***handover details*** are read/passed on 1.5. Confirm availability and status of necessary permits to work in accordance with operational and legislative requirements 1.6. Confirm availability of necessary third party utilities
2. Maintain pumps	2.1. Inspect lubrication, brake cooling and oil flushing pumps for leaks or abnormal operation 2.2. Lubricate pumps 2.3. Replace packing in centrifugal pumps
3. Operate, maintain and repair gate valves associated with mud system	3.1. Identify, locate and apply ***personal protective equipment*** 3.2. Align, open and close valves in accordance with operating procedures 3.3. Lubricate valve stems as required 3.4. Identify defective parts in valves and replace
4. Operate and maintain chemical mixing pumps and equipment	4.1. Identify faults or potential faults and report immediately 4.2. Identify, ***record*** and/or report requirement for repair or maintenance 4.3. Perform ***equipment*** checks regularly and efficiently as prescribed in the operator's manual 4.4. Line up valves properly 4.5. Engage mixing and transfer pumps 4.6. Lubricate valves, mixing pumps and

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	transfer pumps 4.7. Replace defective or malfunctioning parts and valves on pumps 4.8. Clean and inspect mixing hopper and mixing area 4.9. Isolate equipment as required

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate and maintain ancillary equipment:

- apply legislative, organisation and site requirements and procedures for operating and maintaining ancillary equipment
- recognise and report equipment malfunction or failure
- supervise and train subordinates to provided standards
- work as directed by driller timely and efficiently
- maintain pumps in pump room
- align, open and close valves as appropriate
- use safety equipment, including fire protection, First Aid and vessel entry equipment
- lubricate valve stems
- replace defective parts in valves
- operate and maintain chemical mixing pumps and equipment
- clean and inspect mixing hopper and mixing area
- isolate and look out equipment as required

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate and maintain ancillary equipment:

- mud system ancillary equipment
- company and statutory safety guidelines, procedures and practices
- safe operating procedures when operating equipment
- rig maintenance
- normal drilling operations
- use of communication methods, including:
  - 2-way radio
  - intercom
  - telephone
  - oral instruction
  - written instruction
  - hand signals
  - telephone

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- public address system
- weather conditions, including:
  - day/night
  - storm/lightning
  - hot/cold
  - wet/dry
- non-routine drilling operations
- discharge types and characteristics, including liquids, gases and solids
- material characteristics, including flammable, toxic, corrosive and explosive
- man management/rig management
- company maintenance system
- permit to work system
- equipment isolation procedures
- specialised hand tools

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating and maintaining ancillary equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of ancillary equipment operation and maintenance • working with others to undertake and complete the operation and maintenance of ancillary equipment that meets all of the required outcomes • consistent timely completion of ancillary equipment operation and maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation and maintenance of ancillary equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • safe working practices
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig
Statutory requirements may include:	• OHS • duty of care • environment • (PSLA) Petroleum Submerged Lands Act (where relevant) • petroleum regulations
Coordination requirements may	• other equipment operators • maintenance personnel

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include:	• supervisors • site personnel

Briefing/handover details may include:	• task specific information
	• pre-tour safety meeting
	• location of potential hazards
	• task specific - Job Safety Analysis (JSA)
	• supervision of floor crew
	• pump equipment maintenance
	• safety briefing/induction
	• weekly safety meetings
	• agreed procedures may include:
	  • company
	  • facility
	  • client
	  • toolbox
	  • permit to work

Personal protective equipment may include:	• eye protection • hearing protection • gloves • footwear • hard hats • respirators
Record may include recording:	• service and maintenance details • replacement parts
Equipment may include:	• mixing pumps • change pumps • desander • desilter • centrifuges • degaser • piping • valves • agitators • caustic mixing system • mud guns • mixing hoppers • shearing devices • (PVT) system • pit volume totaliser • lubrication pumps • bolt material system

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	• chemical handling system • dust/fuel extraction system

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD301A Conduct and maintain derrick operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct and maintenance of derrick operations in the drilling industry. It includes planning and preparing for derrick operations, handling tubulars and equipment, inspecting and performing routine maintenance of derrick and connected equipment, preparing for and drilling surface holes, participating in head-up and pressure tests, drilling main holes, preparing to commence drilling operations, assisting in running and cementing casings, assisting driller on drill floor, and shutting down rig and rig out. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for derrick operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Clarify ***difficulties*** in carrying out the instructions with the relevant personnel 1.4. Identify, manage and report all potential ***hazards*** 1.5. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities and ensure ***briefings***/***handover details*** are read/passed on 1.6. Confirm availability and status of necessary permits to work 1.7. Confirm availability of necessary third party ***utilities*** in accordance with operational requirements 1.8. Confirm availability of required quantities and type of consumables against operational requirements 1.9. Identify errors, omissions and shortages and take appropriate ***remedial action*** within functional responsibility 1.10. Inform driller of current operating conditions
2. Handle tubulars and equipment	2.1. Position ***tubulars*** and ***equipment*** according to operational requirements 2.2. Assist in making and breaking connections where appropriate 2.3. Identify faults and defects accurately and take appropriate remedial action within functional responsibility 2.4. Handle equipment using safe lifting and handling techniques
3. Inspect and perform routine maintenance of derrick and connected equipment	3.1. ***Inspect*** safety lines, ropes, air hoists, monkey board, sheaves, crown block, derrick bolts, pins and welds, and all other lines and equipment in or attached to the derrick 3.2. ***Lubricate*** air hoists, sheaves, crown block

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	fast line guide 3.3. Replace defective parts and effect minor repairs 3.4. Perform jobs or tasks such as hanging back of travelling block, replacement of sheaves, as required 3.5. Complete pre-raise and pre-circulation checks in accordance with statutory and company procedures
4. Prepare for and drill surface hole	4.1. Establish circulation 4.2. Perform pre-spud safety checks 4.3. Check all connections and valves to floor are in proper position 4.4. Maintain drilling fluid volume and properties 4.5. Inform driller of current operating conditions 4.6. Maintain inventory of circulation system/parts 4.7. Check and record mud additives 4.8. Check availability of derrick casing equipment 4.9. Follow all operators' instructions
5. Participate in head-up and pressure test	5.1. preparations for necessary equipment changes 5.2. Prepare drilling fluid 5.3. Assist in nippling-up 5.4. Assist driller in BOP testing
6. Drill main hole	6.1. Consult driller and mud engineer's program, if available, and follow instructions 6.2. Maintain housekeeping and safe practices during drilling 6.3. Assist in completion or abandonment of well as required 6.4. Convert between metric and imperial 6.5. Record reading of depth, direction and azimuth accurately and legibly
7. Prepare to commence drilling operations	7.1. Align equipment on active systems for drilling 7.2. Turn on and check all appropriate machinery

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	7.3. Watch for returns if riser installed 7.4. Measure and log pit levels regularly
8. Assist in running and cementing of casing.	8.1. Follow instructions when running casing 8.2. Align valves and fluid system for casing fill-up line 8.3. Rig up, function test, lubricate and operate casing stabbing board 8.4. Attach and secure safety lines to all circulating lines 8.5. Circulate fluid in accordance with instructions 8.6. Mix chemicals for cementers and align pumps to cementing unit 8.7. Weigh cement as it is being mixed 8.8. Align fluid system for displacement of cement 8.9. Monitor returns and pits to assess circulation and returns
9. Assist Driller on drill floor	9.1. Assist in handling and nippling-up of BOP stack 9.2. Carry out role of assistant to driller when on drill floor in accordance with site instructions
10. Shutdown rig and rig out	10.1. Wash and drain circulation system 10.2. Repair equipment in accordance with company and manufacturer's instructions 10.3. Store equipment safely and in accordance with company procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct and maintain derrick operations:

- apply legislative, organisation and site requirements and procedures for conducting and maintaining derrick operations
- interpret and apply occupational health and safety requirements and procedures
- accept constructive criticism
- apply numeracy skills to calculate:
  - fractions, decimals, percentages
  - volume
  - quantities
  - weight
  - length
  - density/specific gravity
  - temperature
  - ph
  - basic geometry, e.g. interpreting depth, direction and azimuth and dip of hole
- developed written and verbal communications skills, including use of:
  - 2-way radio
  - intercom
  - telephone
  - written instruction
  - oral instruction
  - hand signals
  - telephone
  - public address system
- prepare and complete understandable reports
- communicate tactfully with mud engineer and operator's representative and inform driller of problems if they arise

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct and maintain derrick operations:

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- recognise and report equipment malfunction or failure
- supervise and train subordinates to provided standards
- work as directed by driller timely and efficiently
- conduct routine maintenance of derrick
- prepare for drilling operations
- prepare for the tripping of tubulars
- assist in running and cementing of casing
- assist driller in handling and nipple up of bop stack
- act as assistant to driller on drill floor
- keep circulation system clean and operating well
- look after equipment and dispose of waste properly
- follow instructions conscientiously
- be aware of position of crew members on floor during handling of drillstem
- safe operating procedures when operating equipment
- conversion between metric and imperial
- rig maintenance
- normal drilling operations
- non-routine drilling operations
- man management/rig management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting and maintaining derrick operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of derrick operations and maintenance • working with others to undertake and complete the conduct and maintenance of derrick operations that meets all of the required outcomes • consistent timely completion of derrick operations and maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct and maintenance of derrick operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • safe working practices • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • Petroleum Submerged Lands Act (PSLA) • petroleum regulations
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements • job instructions • technical information • mud engineer's program • manufacturer's instructions • Job Safety Analysis (JSA) • training materials • consideration of substances • continuous communication

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	• reacting to on-site emergencies

Difficulties may include:	• working in proximity to drilling rig
	• weather conditions including:
	  • day/night
	  • storms and lightning
	  • hot/cold
	  • wet/dry

Coordination requirements may include:	• pre-tour safety meetings
	• work inspection
	• task specific - job safety analysis (JSA)
	• tour reports updated
	• permit prepared where applicable
	• safety equipment (e.g. harness, lanyards) inspected and used as appropriate
	• safety briefing/induction
	• weekly safety meetings
	• agreed procedures may include:
	  • company
	  • facility
	  • client
	• toolbox
	• permit to work

Utilities may include:	• air • fuel • power • cranage • lighting
Remedial action may include:	• reporting • recording • replacing • repairing • adjusting
Tubulars may include	• drill pipe • drill collars • casing • tubing
Equipment may include:	• winches • ropes • racking board • safety belt

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	• consumables • derrick climber/fall arrester, geronimo line and rider • backing system - manual/automated • casing stabbing system - board/basket • safety appliances and personal protective equipment derrick escape system
Inspect may include:	• safety lines • ropes • air hoists • monkey board • sheaves • crown block • derrick bolts • pins and welds • all other lines and equipment in or attached to the derrick
Lubricate may include:	• air hoists, sheaves • crown block • fast line guide

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD302A Trip casing

Modification History

Not applicable.

Unit Descriptor

This unit covers the tripping of casing in the drilling industry. It includes planning and preparing for operations, preparing to trip casing, and operating derricks during tripping of casing. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Identify, locate and apply ***personal protective equipment*** 1.5. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities and ensure ***briefings***/***handover details*** are read/passed on 1.6. Confirm availability and status of necessary permits to work in accordance with operational and legislative requirements 1.7. Confirm availability of necessary third party utilities in accordance with operational requirements
2. Prepare to trip casing	2.1. Check grade or grades of casing 2.2. Supervise crew in correctly positioning casing on racks 2.3. Measure and record casing 2.4. Identify joint by the numerical order in which it will be run in the hole and its measured length 2.5. Supervise crew to remove thread protectors, rabbit casing, clean and lubricate threads in accordance with good oilfield practice 2.6. Check casing shoe and hanger joints for damage to threads, sealing surfaces and flapper valves where fitted 2.7. Assemble and check operating conditions of casing running equipment, including slips, tongs, elevators, rubber clamp, protectors and tailing ropes 2.8. Line up pumps to fill casing during running operation

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3. Operate derrick during tripping of casing	3.1. Steady casing during stabbing 3.2. Release pick-up elevators 3.3. Correctly align casing for make-up 3.4. Latch side door or slip type elevators 3.5. Relieve casing stabber during casing running operations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to trip casing:

- apply legislative, organisation and site requirements and procedures for conducting trip casing
- recognise and report equipment malfunction or failure
- supervise and train subordinates to provided standards
- work as directed by driller timely and efficiently
- supervise deck crew in correctly positioning casing in pipe bays
- remove thread protectors, rabbit casing, clean and lubricate threads
- check casing shoe and hanger joints for damage to threads, sealing surfaces and flapper valves where fitted
- assemble and check operating condition of casing running equipment, including slips, tongs, elevators, rubber clamp, protectors and tailing rope
- line up pumps to fill casing during running operations
- work derrick correctly during tripping of casing
- steady casing during stabbing
- release pick-up elevators when directed
- correctly align casing for make-up
- correctly latch side door or slip type elevators
- check grades of casing and supervise deck crew in correctly positioning casing in pipe bays
- measure and record casing in the numerical order in which it will be run into the hole

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to trip casing:

- legislative, site and manufacturer's requirements and procedures
- company and statutory safety guidelines, procedures and practices
- safe operating procedures when operating equipment
- rig maintenance
- types and characteristics of discharges including liquids, gases and solids
- types and characteristics of materials including flammable, toxic, corrosive, explosive and radioactive
- inspection, fault finding and reporting requirements and procedures

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- dust suppression techniques
- drill system characteristics, technical capability and limitations
- normal drilling operations
- non-routine drilling operations
- man management/rig management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for tripping casing • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of trip casing • working with others to undertake and complete the tripping of casing that meets all of the required outcomes • consistent timely completion of trip casing that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the tripping of casing

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • Petroleum Submerged Lands Act (PSLA) • petroleum regulations • environmental protection requirements

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks
	• specifications
	• quality of finished works
	• achieved targets
	• operational conditions
	• obtaining of required permits
	• site layout
	• out of bounds areas
	• worksite inspection requirements
	• lighting conditions
	• plant of equipment defects
	• coordination requirements or issues
	• contamination control requirements
	• safety equipment including fire protection and First Aid
	• environmental control requirements
	• barricade and signage requirements
	• information received through communication methods including:
	  • 2-way radio
	  • intercom
	  • telephone
	  • written instruction

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	• oral instruction • hand signals • public address system

Hazards may include:	• working in proximity to drilling rig
	• working in a variety of weather conditions including:
	  • day/night
	  • storms - high winds and lightning
	  • hot/cold
	  • wet/dry (dusty)

Personal protective equipment may include:	• eye protection • hearing protection • gloves • footwear • hard hats • respirators
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Briefings/handover details may include:	• pipe and/or casing tally • preparation of casing running equipment (tongs/stabbing board) • location of potential hazards • review of job safety analysis (JSA) • pre-tour safety meeting • inspection and use of safety harness and lanyard and other safety equipment • inspection and use of hydraulic power tongs, slips, elevators • safety briefing/induction • weekly safety meetings • agreed procedures may include: • company • facility • client • permit to work

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Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD303A Trip pipe

Modification History

Not applicable.

Unit Descriptor

This unit covers the tripping of pipes in the drilling industry. It includes planning and preparing for operations, preparing to trip tubulars, tripping tubulars, and operating racking systems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Identify, locate and apply ***personal protective equipment*** 1.5. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities and ensure ***briefings***/***handover details*** are read/passed on 1.6. Confirm availability and status of necessary permits to work in accordance with operational and legislative requirements 1.7. Confirm availability of necessary third party utilities in accordance with operational requirements 1.8. Check safety lines, ropes and air hoists 1.9. Check equipment for safety and operations
2. Prepare to trip tubulars	2.1. Line up trip tank 2.2. Prepare pipe racking system to stand back, run in, lay down or pick-up pipe, where applicable
3. Trip tubulars	3.1. Latch elevators on to the tubulars which is stabilised by the derrickman while being stabbed by pulling out of the hole 3.2. Latch elevators on to the tubular which is being stabilised by the derrickman while running into hole 3.3. Visually check the elevator latch, identify faults and report 3.4. Operate air hoist to manoeuvre tubulars in the derrick 3.5. ***Record*** tasks where required
4. Operate racking system	4.1. Release pipe from elevators and rack in proper position when pulling out of the hole 4.2. Latch elevators onto drill string and

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	stabilise while stand stabbed by roughnecks when running in the hole 4.3. Operate air hoists which manoeuvre drill string in the derrick

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to trip pipes:

- apply legislative, organisation and site requirements and procedures for tripping pipes
- interpret site requirements and procedures
- interpret work requirements
- prepare pill
- put trip tank on line and fill
- check safety lines, ropes and air hoists
- stand back, run in, lay down and pick up pipecracker
- release pipe from elevators
- latch elevators on drill string and stabilise
- operate air hoists
- operation of a manual or automated racking system

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to trip pipes:

- legislative, site and manufacturer's requirements and procedures
- drilling operation
- company and statutory safety guidelines, procedures and practices
- safe operating procedures when operating equipment
- hand signals
- working knots
- rig maintenance
- types and characteristics of discharges including liquids, gases and solids
- types and characteristics of materials including flammable, toxic, corrosive, explosive and radioactive
- normal drilling operations
- non-routine drilling operations
- man management/rig management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for tripping pipes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of pipe tripping • working with others to undertake and complete the tripping of pipes that meets all of the required outcomes • consistent timely completion of pipe tripping that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the tripping of pipes

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • duty of care • environmental protection requirements • Petroleum Submerged Lands Act (PSLA) • petroleum regulations

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks
	• specifications
	• quality of finished works
	• achieved targets
	• operational conditions
	• obtaining of required permits
	• site layout
	• out of bounds areas
	• worksite inspection requirements
	• lighting conditions
	• plant of equipment defects
	• coordination requirements or issues
	• safety equipment including fire protection, First Aid and safety harnesses
	• contamination control requirements
	• environmental control requirements
	• barricade and signage requirements
	• information received through communication methods including:
	  • 2-way radio
	  • intercom
	  • telephone

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	• written instruction • oral instruction • hand signals • public address system • consideration of toxic substances • continuous communication • reacting to on-site emergencies
Hazards may include:	• working in proximity to drilling rig • weather conditions including: • day/night • storms - high winds and lightning • hot/cold • wet/dry (dusty)
Personal protective equipment may include:	• eye protection • hearing protection • gloves • footwear • hard hats • respirators • fall arrester
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Briefings/handover details may include:	• maintain and check pipe tally • preparation of derrick/floor equipment • line up trip tank/preparation of mud system • review of PTW requirements • pre-tour safety meeting • review of Job Safety Analysis (JSA) • safety briefing/induction • weekly safety meetings • agreed procedures may include: • company • facility • client • toolbox • permit to work
Record may include logging:	• pipe tally sheets

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Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD304A Apply effective coal seam gas control practices

Modification History

Not applicable.

Unit Descriptor

This unit covers the application of effective coal seam gas control practices in the drilling industry. It includes planning and preparing for operations, applying coal seam gas control strategies, coordinating coal seam gas control crew activities, operating and monitoring coal seam gas control equipment and processes, and applying coal seam gas kill procedures.

Application of the Unit

This unit is appropriate for those working in operational roles in coal-seam methane gas drilling operations, at worksites within:

- Coal mines
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Apply coal seam gas control strategies	2.1. Apply approved methods to control identified ***hazards*** associated with coal seam gas control under varying ***working conditions*** 2.2. Recognise and respond to ***early warning signs*** of kicks and coal seam gas going under-balanced while drilling 2.3. Recognise ***kick indicators*** and apply kick detection methods and responses during coal seam gas control operations 2.4. Operate equipment to minimise ***swabbing and surging*** 2.5. Apply tripping methods in accordance with operating requirements 2.6. Apply relevant components of industry requirements and government regulations related to coal seam gas control and influx prevention during operations 2.7. Prepare ***records and reports*** according to requirements
3. Coordinate coal seam gas control crew activities	3.1. Inform assistants of their roles and responsibilities in a coal seam gas control situation and monitor their application 3.2. ***Communicate*** operational activities and information to other crew during coal seam gas control operations 3.3. Conduct coal seam gas control ***drills and exercises*** to ensure crew readiness for emergency situations
4. Operate and monitor coal seam gas control equipment and processes	4.1. Verify availability and set up of coal seam gas control equipment 4.2. Inspect ***coal seam gas control equipment*** for safety and fitness-for-purpose and

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	rectify and/or report faults and malfunctions 4.3. Install, test and operate coal seam gas control equipment to manufacturer's and operational requirements 4.4. ***Monitor***, ***read and interpret*** measuring and testing equipment and devices to ensure planned, safe, effective coal seam gas control 4.5. Assist in installation, maintenance and replacement of equipment
5. Apply coal seam gas kill procedures	5.1. Confirm ***coal seam gas control procedures and activities*** with crew members 5.2. Apply ***operational instructions*** 5.3. Apply coal seam gas control working practices 5.4. Apply ***coal seam gas kill methods*** according to requirements 5.5. Carry out emergency shutdown procedures 5.6. Communicate incident information to other crew members

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following, as required to apply effective coal seam gas control practices:

- apply legislative, organisation and site requirements and procedures
- work in a team
- take measurements
- make calculations and estimations relevant to activities
- interpret gauges
- apply kick warning signs and indicators detection procedures
- interpret work instructions and procedures
- supervise drill assistant
- conduct and evaluate drills and exercises
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply effective coal seam gas control practices:

- the principles and practices of coal seam gas control
- coal seam gas control procedures and their application
- risks and their controls related to coal seam gas control
- kill principles and methods
- effects of hydrostatic pressure when drilling through gas bearing formations
- sources of ignition and their dangers and controls
- function, installation, operation, maintenance and use of coal seam gas control and auxiliary equipment
- causes, effects and response to equipment failures
- drilling parameters and their interpretation
- purpose, operation and interpretation of measuring and testing devices
- kick detection warnings and indications and the responses to them
- purpose, type and conduct of coal seam gas control emergency drills and exercises
- causes and effects of swabbing and surging
- pressure concepts and effects
- communication methods and protocols during coal seam gas control operations
- influx parameters

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- tripping requirements and techniques
- emergency shutdown methods
- type, format and implementation of coal seam gas control documents

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application of effective coal seam gas control practices • implementation of requirements, procedures and techniques for the safe, effective and efficient application of effective coal seam gas control practices • working with others to undertake and complete effective coal seam gas control practices that meet all of the required outcomes • consistent timely application of effective coal seam gas control practices that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site

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	circumstances. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete effective coal seam gas control practices

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Coordination requirements may include:	• drill team • other equipment operators • maintenance personnel • supervisors • worksite personnel
Hazards may include:	• blow out gas to surface • ignition of gas • toxic gases • pressurised coal seam gas system

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Working conditions may include:	• night time operations • day time operations • hot climates • cold climates • snow • wet weather conditions • high wind
Early warning signs may be:	• rate of penetration trends • trends shown in torque/drag
Kick indicators may include:	• flow from coal seam gas (pump off) • increase in flow from coal seam gas (pumps on) • pit volume gain
Swabbing and surging may be affected by:	• coal seam gas and pipe geometry • coal seam gas depth • fluid characteristics • coal seam gas conditions and formation properties • tool pulling and running speeds • BHA configuration
Records and reports may include:	• specifications • operator's instructions • drilling program • technical information • daily pre-tour checklist • daily pre-drilling checklist • AP RP 53 • tour sheet • tour reports and drilling logs • kill sheet • incident report form • drilling line record sheet • shut-in procedures • equipment damage report
Communications may include:	• 2-way radio • hand signals • telephone • public address system • written work instructions
Drills and exercises may include:	• pit drill • trip drill

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	• abandonment drill • evacuation
Coal seam gas control equipment may include:	• mud system • diverters • auxiliary equipment • pressure measuring devices • gas detection equipment and devices • diverters
Monitoring, **reading and interpreting** may apply to:	• drilling fluid gain or loss • drilling parameters • pressure gauges • mud balance values • pump stroke counters • gas readings • amount of fluid added to coal seam gas • kick warnings and indicators • circulation rate
Coal seam gas control procedures and activities may include:	• time of coal seam gas shut-in • initial shut-in pressures • stage of kill • type of kill procedure employed • status of coal seam gas control equipment • flow path for coal seam gas control method • agreed procedures
Operational instructions may include:	• type of kill procedure to use • type of shut-in procedure to use • action to be taken in the event of approaching MAASP • monitoring pit levels
Working practices may include:	• confirmation of shut-in • monitoring of shut-in pressures • monitoring of accumulator pressures • correct SPM to be maintained during kill • monitoring pump efficiency • individual operation • team operation • use of personal protective equipment • consideration of H_2S and other toxic substances • consideration of flammables and ignition sources

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	• maintaining continuous communication • reacting to on-site emergencies
Coal seam gas kill methods may include:	• bringing pump up to kill speed • maintaining constant bottom coal seam gas pressure • shutting down the kill operation while maintaining a constant bottom coal seam gas pressure • controlling the influx using the Driller's Method

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD305A Apply blow out prevention operational procedures

Modification History

Not applicable.

Unit Descriptor

This unit covers the applying of blow out prevention operational procedures in the drilling industry. It includes: planning and preparing for applying of blow out prevention operational procedures; applying coal seam gas control strategies; coordinating coal seam gas control crew activities; operating and monitoring coal seam gas control equipment and processes; and applying coal seam gas kill procedures.

Application of the Unit

This unit is appropriate for those working in a operational roles in coal-seam methane gas drilling operations, at worksites within:

- Coal mining
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for applying of blow out prevention operational procedures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Apply coal seam gas control strategies	2.1. Apply approved methods to control identified ***hazards*** associated with coal seam gas control under varying ***working conditions*** 2.2. Recognise and respond to ***early warning signs*** of kicks and coal seam wells going under-balanced while drilling 2.3. Recognise ***kick indicators*** and apply kick detection methods and responses during coal seam gas control operations 2.4. Operate equipment to control ***swabbing and surging*** 2.5. Apply tripping methods in accordance with operating requirements 2.6. Perform shut-in procedures for bottom-drilling and coal seam gas tripping-in/out according to requirements 2.7. Apply relevant requirements and regulations related to coal seam gas control and influx prevention during operations 2.8. Prepare ***records and reports*** according to requirements
3. Coordinate coal seam gas control crew activities	3.1. Inform assistants of their roles and responsibilities in a coal seam gas control situation and monitor their application 3.2. ***Communicate*** operational activities and information to other crew during coal seam gas control and blow out prevention operations 3.3. Conduct coal seam gas control ***drills and exercises*** to ensure crew readiness for emergency situations
4. Operate and monitor coal seam gas control equipment and	4.1. Verify availability and set-up of coal seam

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processes	gas control equipment 4.2. Inspect ***coal seam gas control equipment*** for safety and fitness-for-purpose and rectify and/or report faults and malfunctions 4.3. Install, test and operate coal seam gas control equipment to operational requirements 4.4. ***Monitor***, ***read and interpret*** measuring and testing equipment and devices to ensure planned, safe coal seam gas control 4.5. Assist in installation, maintenance and replacement of equipment
5. Apply coal seam gas kill procedures	5.1. Confirm ***coal seam gas control procedures and activities*** with crew members 5.2. Check, read, interpret and record pressures and gauges and undertake ***corrective action*** 5.3. Apply ***operational instructions*** 5.4. Apply coal seam gas control working practices 5.5. Apply ***coal seam gas kill methods*** according to requirements 5.6. Monitor the operation of BOP 5.7. ***Monitor and adjust*** the operation of BOP control system 5.8. ***Monitor and control circulation and circulation paths*** to ensure effective coal seam gas control 5.9. Carry out emergency shutdown procedures 5.10. Communicate incident information to other crew members

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply blow out prevention operational procedures:

- apply legislative, organisation and site requirements and procedures
- work in a team
- take measurements
- carryout calculations and estimations relevant to activities
- interpret gauges
- apply kick warning signs and indicators detection procedures
- complete trip sheets
- complete kill sheets
- interpret work instructions and procedures
- supervise drill assistant
- conduct and evaluate drills and exercises
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply blow out prevention operational procedures:

- the principles and practices of coal seam gas control
- coal seam gas control procedures and their application
- risks and their controls related to coal seam gas control
- BOP annular equipment - types and operating principles
- BOP control system principles
- operating principles of chokes and manifolds
- kill principles and methods
- effects of hydrostatic pressure when drilling through gas bearing formations
- sources of ignition and their dangers and controls
- function, installation, operation, maintenance and use of coal seam gas control and auxiliary equipment
- causes, effects and response to equipment failures
- drilling parameters and their interpretation
- purpose, operation and interpretation of measuring and testing devices
- kick detection warnings and indications and the responses to them

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- purpose, type and conduct of coal seam gas control emergency drills and exercises
- causes and effects of swabbing and surging
- pressure concepts and effects
- communication methods and protocols during coal seam gas control operations
- influx parameters
- safe coal seam gas shut-in requirements and procedures
- tripping requirements and techniques
- constant bottom coal seam gas pressure method
- emergency shutdown methods
- type, format and implementation of coal seam gas control documents

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying blow out prevention operational procedures • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the applying of blow out prevention operational procedures • working with others to undertake and complete the applying of blow out prevention operational procedures that meets all of the required outcomes • consistent timely completion of the applying of blow out prevention operational procedures that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete blow out prevention operational procedures

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Coordination requirements may include:	• drill team • other equipment operators • maintenance personnel • supervisors • worksite personnel
Hazards may include:	• blow out gas to surface • ignition of gas • toxic gases • pressurised coal seam gas system

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Working conditions may include:	• night time operations • day time operations • hot climates • cold climates • snow • wet weather conditions • high wind
Early warning signs may be:	• rate of penetration trends • drilling break • trends shown in torque/drag
Kick indicators may include:	• flow from coal seam gas (pump off) • increase in flow from coal seam gas (pumps on) • pit volume gain
Swabbing and surging may be affected by:	• coal seam gas and pipe geometry • coal seam gas depth • fluid characteristics • coal seam gas conditions and formation properties • tool pulling and running speeds • BHA configuration
Records and reports may include:	• specifications • operator's instructions • drilling program • technical information • daily pre-tour checklist • daily pre-drilling checklist • BOP critical test parameters • AP RP 53 • tour sheet • tour reports and drilling logs • kill sheet • incident report form • drilling line record sheet • shut-in procedures • equipment damage report
Communications may include:	• 2-way radio • hand signals • telephone • public address system • written work instructions

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Drills and exercises may include:	• pit drill • trip drill • abandonment drill • evacuation
Coal seam gas control equipment may include:	• mud system • blow out preventer • manifolds and chokes • accumulator • degassers • monitors • diverters • auxiliary equipment • pressure measuring devices • gas detection equipment and devices • Washington-type diverters
Monitoring, **reading and interpreting** may apply to:	• drilling fluid gain or loss • drilling parameters • pressure gauges • mud balance values • pump stroke counters • gas readings • amount of fluid added to coal seam gas • kick warnings and indicators • circulation rate
Coal seam gas control procedures and activities may include:	• time of coal seam gas shut-in • initial shut-in pressures • stage of kill • type of kill procedure employed • status of coal seam gas control equipment • flow path for coal seam gas control method • agreed procedures
Corrective actions may include:	• changing over pumps in the event of primary failure • using secondary choke in the event of primary failure • using alternate preventer in the event of primary failure • running accumulator emergency backup in case of primary failure
Operational instructions may include:	• type of kill procedure to use • type of shut-in procedure to use • action to be taken in the event of approaching

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	MAASP • monitoring pit levels
Working practices may include:	• confirmation of shut-in • monitoring of shut-in pressures • monitoring of accumulator pressures • correct circulation rate to be maintained during kill • monitoring pump efficiency • individual operation • team operation • use of personal protective equipment • consideration of H_2S and other toxic substances • consideration of flammables and ignition sources • maintaining continuous communication • reacting to on-site emergencies
Coal seam gas kill methods may include:	• bringing pump up to kill speed • maintaining constant bottom coal seam gas pressure • shutting down the kill operation while maintaining a constant bottom coal seam gas pressure • controlling the influx using the Driller's Method
Monitoring and adjusting may include:	• pressures • volumes • flows
Monitoring and controlling circulation and circulation paths may include:	• existing and alternative paths from the pump through the choke manifold to the disposal system • valve status for specific circulating paths • assessing the circulation hydrostatic head to determine of a drop in the level of drilling fluid in the annulus on hydrostatics balancing pressure

Unit Sector(s)

Drilling (Oil and Gas)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD401A Rig up, conduct pre-spud operations and rig down

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of rig up, pre-spud and rig down operations in the drilling industry. It includes: planning and preparing for rig up operations; rigging up to spud; preparing for drilling of surface hole/subsea hole; preparing for pre-spud operations; conducting operations as per drilling program; and carrying out rig down operations. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Carry out pre rig-up procedure inspections (by rig manager, operator and crew) in accordance with standards for individual rigs 1.6. Coordinate movement of load and sequence of installation and location in accordance with rig movement plan 1.7. Check ***equipment*** for damage and/or loss by moving contractor and report and BI in accordance with requirements
2. Rig up to spud	2.1. Receive and action rig manager authorisation to commence rig-up to spud operations 2.2. Receive detailed ***instructions*** on use and type of mud from the operator and distribute as appropriate and to required specifications 2.3. Identify potential rig-up problems and take ***corrective action*** 2.4. Keep rig manager informed of operations in accordance with legislative and company requirements
3. Prepare for drilling of surface hole/subsea hole	3.1. Check drilling and hoist equipment, report damage to rig manager and ***record*** in accordance with company policies and procedures 3.2. Conduct equipment checks for nippling-up or cross-checked with relevant procedures 3.3. Check handling equipment for correct sizing and if fit for purpose 3.4. Confirm availability of and inspect, clean, calibrate and record tubulars in accordance

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	with requirements 3.5. Check well control equipment against work program requirements 3.6. Identify special tool requirements and check if fit for purpose and approved for use
4. Prepare for pre-spud operations	4.1. Lock pipe racks with drill pipe and position drill collars for immediate use 4.2. Inspect casing running tools and prepare for operation 4.3. Record casing tallies and report to appropriate company officer
5. Conduct operations as per drilling program	5.1. Determine optimum circulating and penetration rates and check deviations are in accordance with operators drilling program 5.2. Continually check mud cleaning equipment and screens for integrity and correct operation 5.3. Check drilling fluid quantities against program requirements with sufficient being in reserve to kill well and keep hole on full trip 5.4. Record correct mud properties on tour report 5.5. Operate all equipment in accordance with manufacturer regulations and company procedures 5.6. Maintain a sound working relationship with third party contractors
6. Rig down	6.1. Receive and action rig manager authorisation to commence rig-down operations 6.2. Identify potential rig-down problems and take corrective action 6.3. Keep rig manager informed of operations in accordance with legislative and company requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to rig up, conduct pre-spud operations and rig down:

- apply legislative, organisation and site requirements and procedures
- oversee rigging
- manage and maintain pre-spud operations
- participate in inspections
- develop crew schedules and allocate jobs
- oversee mud-mixing operations
- check equipment/tools and record, report and rectify faults
- delegate
- problem solve
- plan for all circumstances
- operate forklift in line with licensing requirements
- read, interpret and apply regulations/company procedures
- convert from metric to imperial measurement
- carrying out calculations including:
  - quantities
  - up-hole velocity
  - specific gravity
  - volume
  - hydrostatic pressures
- operate machinery in a safe manner
- communicate effectively with management, crew and contractors
- meeting skills
- negotiation skills
- troubleshoot during drilling program
- read documents including:
  - load schedules
  - operating procedures
  - forms
  - government specifications

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit,

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particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to rig up, conduct pre-spud operations and rig down:

- rigging and slinging
- forklift operations
- local authorities
- rig specifications and measurements
- metric-imperial conversion
- marine operations
- drilling program to pre-spud operations
- drilling equipment
- rig up procedures
- casing
- mud systems
- routine drilling operations
- Job Safety Analysis (JSA)
- marine operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for rig up, pre-spud and rig down operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of rig up, pre-spud and rig down operations • working with others to plan, prepare and conduct rig up, pre-spud and rig down operations • evidence of the consistent successful rig up, pre-spud and rig down operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete rig up, pre-spud and rig down operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of rig up, pre-spud and rig down operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures including:
	  • Petroleum Submerged Lands Act (PSLA)
	  • confined space
	  • occupational health and safety
	  • duty of care
	• manufacturer's guidelines and specifications
	• Australian standards
	• code of practice
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation
	• job sheet analysis (JSA)
	• organisational documentation may include:
	  • hazard sheets
	  • lease layout
	  • rig layout
	  • rig standards/specifications
	  • instructions (e.g. use and type of mud)
	  • drilling plan
	  • chemical labels
	  • operator manuals
	  • load schedules
	  • operating procedures

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• crewing schedules and allocating jobs to crew with drilling plan and prognosis being discussed with crews • safety briefing/induction • pre-tour safety meeting • tour changeover discussions • operator's representative memorandums • weekly safety meetings • Job Safety Analysis (JSA)

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	• instructions for specific jobs including:
	  • unloading of trucks
	  • unsecuring of loads
	  • assembling of rig
	  • connecting power
	  • trench digging
	  • checking installation of safety equipment
	  • installing waste pits
	  • stowing equipment in correct stowages
	  • drilling parameters to be maintained
	  • mud density
	  • casing depths
	  • pre-safety check
	  • pre-spud check
	  • individual operation
	  • team operation
	  • use of personal protective equipment
	  • consideration of h2s and other toxic substances
	  • continuous communication maintained
	  • reacting to on-site emergencies
	• emergency disconnect sequence
	• agreed procedures may include but are not limited to:
	  • company
	  • facility
	  • client
	• maintaining records including:
	  • crewing schedules
	  • rig up checklist
	  • pre-spud audit
	  • tubular tallies
	• nature and scope of tasks
	• specifications
	• quality of finished works
	• achieved targets
	• operational conditions
	• obtaining of required permits
	• site layout
	• out of bounds areas

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	• worksite inspection requirements
	• lighting conditions
	• plant of equipment defects
	• coordination requirements or issues
	• contamination control requirements
	• environmental control requirements
	• barricade and signage requirements
	• remedial action to be taken to deal with errors, omissions and shortages include:
	  • corrective action request against procedures
	  • altering Job Safety Analysis (JSA) to include improved procedures

Hazards may include:	• working in proximity to drilling rig
	• working in different conditions including:
	  • night time operations
	  • day time operations
	  • hot climates
	  • cold climates
	  • wet weather conditions
	  • high wind

Coordination requirements may include:	• developing crewing schedules and allocating jobs to crews in line with operational requirements • other equipment operators • maintenance personnel • supervisors • site personnel
Equipment may include:	• drill strings • handling gear including tools • drilling rig and components • instrumentation • tubulars • mud system and auxiliary equipment
Instructions may be received via:	• 2-way radio • hand signals • telephone • public address system • written work instructions • internet or intranet communications
Corrective action may include:	• informing rig manager • informing company representative

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	• allocating maintenance tasks to appropriate person
Record may include:	• damage reports • casing tallies • pre-spud operational reports

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD402A Participate in nippling-up and pressure test

Modification History

Not applicable.

Unit Descriptor

This unit covers participating in nippling-up and pressure testing in the drilling industry. It includes planning and preparing for nippling up and pressure testing, and pressure testing during intermediate and/or main holes. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for nippling-up and pressure testing	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task and identify required ***equipment*** 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Check and adjust casing bowl and position level as required 1.6. Perform BOP test as per operator's written instructions 1.7. Carry out rig-up to drill-out operations in accordance with parameters and specifications 1.8. Carry out pressure tests prior to drilling out and ***record*** in tour book
2. Pressure testing during intermediate and/or main holes	2.1. Confirm pressure test program/timing and comply with procedures 2.2. Check cup testers and plugs for sizing and integrity 2.3. Monitor and maintain stack within deviation limit 2.4. Adhere to safety practices during pressure test operations.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to participate in nippling-up and pressure testing:

- apply legislative, organisation and site requirements and procedures for nippling-up and pressure testing
- manage and monitor rippling up and pressure testing within a team environment
- delegate
- administer good communication skills
- problem solve
- plan for all circumstances
- use hand tools correctly
- perform a range of numerical calculations including:
  - volume
  - quantities
  - mass
  - weight
  - length
  - pressure
  - using calculator if required
  - using estimating skills (e.g. mental arithmetic, visualisation of size and quantity)
  - basic geometry (e.g. interpreting depth, direction, angles)
  - use of metric and imperial and conversion between the two

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to participate in nippling-up and pressure testing:

- high pressure lines requiring pressure testing
- understanding of test equipment
- testing procedures
- operations of a hydraulic torque wrench
- rig maintenance procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for nippling-up and pressure testing • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of nippling-up and pressure testing • working with others to plan, prepare and conduct nippling-up and pressure testing • evidence of the consistent successful participation in nippling-up and pressure testing
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete nippling-up and pressure testing
	  • provision of clear and timely instruction and supervision by the individual of those involved in participation in nippling-up and pressure testing

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures including:
	  • Petroleum Submerged Lands Act (PSLA)
	  • Duty of Care
	  • environmental guidelines
	  • operator's instructions
	  • specifications
	  • drilling program
	  • occupational health and safety documents
	  • materials safety data sheets(MSDS)
	  • Job Safety Analysis (JSA)
	  • relevant safety alerts
	• manufacturer's guidelines and specifications
	• Australian standards
	• code of practice
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• communication through:
	  • pre-job
	  • pre-tour
	  • safety meeting
	  • handover with oncoming driller
	  • 2-way radio
	  • hand signals
	  • telephone
	  • public address system
	  • written work instructions
	  • internet and intranet
	• nature and scope of tasks
	• specifications
	• quality of finished works

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	• achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Equipment may include:	• gaskets • hand tools • wrenches • cleaning materials

Hazards may include:	• working in proximity to drilling rig
	• working in different conditions including:
	  • night time operations
	  • day time operations
	  • hot climates
	  • cold climates
	  • wet weather conditions
	  • high wind

Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Record may include:	• results of pressure testing • other test results as required • hazard observation reports

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIOGD403A Conduct drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of drilling operations in the drilling industry. It includes planning and preparing for drilling operations, commencing drilling operations, maintaining drilling operations, drilling intermediate and/or main holes, and preparing for hole abandonment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for drilling operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Communicate emergency response and occupational health and safety requirements, including the possibility of wellbore influx and well control, to crew members 1.5. Resolve and maintain ***coordination requirements*** with others at the site prior to commencing and during work activities 1.6. Check, clean and lubricate ***equipment***, including mud riser/conductor/connections and rectify and report faults 1.7. Check tool requirements and assembled in wellhead area
2. Commence drilling operations	2.1. Double-check drilling program requirements to ensure safe operations 2.2. Undertake surface hole drilling in accordance with Job Safety Analysis (JSA) and drilling program, and confirm with operator's representative 2.3. Commence intermediate and main hole drilling operations 2.4. Monitor, maintain and ***record*** drilling parameters in line with drilling program 2.5. Calculate and maintain kill sheet requirements and carry out and record integrity tests in line with drilling program 2.6. Maintain accurate tubular tallies 2.7. Inspect and prepare casing running tools and casing for operation
3. Maintain drilling operations	3.1. Undertake cementing preparations in accordance with operator's instructions and company procedures 3.2. Run casing and prepare for cementing in accordance with job safety analysis, and cement in accordance with well engineering

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	prognosis 3.3. Undertake preparations, and give assistance in drilling stem tests and logging and coring operations 3.4. Instruct crew on safe core recovery procedures 3.5. Put arrangements in place for nippling-up and drilling out
4. Drill intermediate and/or main holes	4.1. Confirm drilling program/timing schedule and comply with procedures 4.2. Check equipment and tools for sizing and integrity with faults being rectified/reported 4.3. Maintain hole within deviation limits 4.4. Adhere to sound drilling and safety practices during nippling-up and pressure testing operations
5. Prepare for hole abandonment	5.1. Confirm program for completion or abandonment with operator representative 5.2. Check tools/equipment for integrity and record and report faults 5.3. Complete appropriate ***communication*** and recording requirements to regulations and company policies/procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct drilling operations:

- apply legislative, organisation and site requirements and procedures for conducting drilling operations
- operate rig in a safe and productive manner
- delegate work to individuals according to established levels of skill
- administer effective communication skills - oral and written
- troubleshoot and problem solve, including rise in rotary torque and mud pressure
- forward planning in preparation of changing circumstances/contingencies
- use a calculator and convert from metric to imperial measurements
- shutdown the rig in an emergency and coordinate an orderly evacuation if necessary
- perform calculations including:
  - quantities
  - up-hole velocity
  - specific gravity
  - volumes and capacities
  - pressure calculations

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct drilling operations:

- rig components
- rig specifications
- hole recovery procedures, including fishing, assembly service maintenance and tools
- potential problems
- down hole conditions
- types of mud available
- rigging and slinging
- rig maintenance procedures
- evacuation procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting drilling operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of drilling operations • working with others to plan, prepare and conduct drilling operations • evidence of the consistent successful conduct of drilling operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete drilling operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures including:
	  • Job Safety Analysis (JSA)
	  • environmental guidelines
	  • specifications
	  • operator's instructions
	  • drilling program
	  • technical information
	  • Petroleum Act
	  • daily pre-tour checklist
	  • daily pre-drilling checklist
	  • Job Sheet Analysis (JSA)
	  • API RP 53
	  • API RP 59 (if applicable)
	  • site specific manual
	• manufacturer's guidelines and specifications
	• Australian standards
	• code of practice
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• discussing and confirming drill program requirements with crew members
	• pre-job requirements
	• drilling parameters, which may include:
	  • surveys
	  • pressure testing
	  • conditioning the hole
	  • circulating and penetration rates
	  • mud properties
	• BHA performance parameters, which may include, make-up torque
	• ancillary operation, which may include:

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	• logging • cementing • rig-up operations • pre-tour safety meeting • safety meeting/briefing • handover with oncoming driller • maintaining records including: • tour sheet • API metric tour report • kill sheet • incident report form • drilling line record sheet • shut-in procedures • weekly safety meeting report • pre-tour safety meeting report • warning/counselling record • equipment damage report • taking remedial action including alteration to drilling program as approved by operator's representative via operator company head office • nature and scope of tasks
Hazards may include:	• working in proximity to drilling rig • working in different conditions including: • night time operations • day time operations • hot climates • cold climates • wet weather conditions • high wind
Coordination requirements may include instructing and communicating with:	• drill crew • other equipment operators • maintenance personnel • contractors • supervisors • site personnel
Equipment may include:	• wellhead equipment • casing centraliser and nails • thread lubricant • cement plugs

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	• cement mix chemicals • bottom hole assembly (BHA) • tubulars • mud equipment
Records may include:	• WIP sheets • WIP volumes • Kill sheets • Slow circulation rates (SCR)
Communication may be via a range of channels which may include:	• 2-way radio • hand signals • telephone • public address system • written work instructions • intranet and internet

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD404A Coordinate air drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the coordination of air drilling operations in the drilling industry. It includes planning and preparing for air drilling operations, and examining correct air drilling procedures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for coordination of air drilling operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Apply air drilling and conventional mud drilling techniques 1.6. Apply occupational health and safety and emergency procedures to air and conventional mud drilling
2. Examine correct air drilling procedures	2.1. Demonstrate Job Safety Analysis (JSA) for air drilling application 2.2. Identify and implement emergency response plan for air drilling operations 2.3. Obtain, interpret and apply pre-tour and pre-drilling checklists 2.4. Identify components that make up an air drilling package and explain their use to crew members 2.5. Identify and apply parameters to watch during operations whilst air drilling 2.6. Identify and secure crew numbers and expertise for air drilling operations 2.7. Identify and confirm conditions required to initialise the drilling of new holes in accordance with company procedures 2.8. Identify and explain test procedures to crew and carry out in accordance with company requirements 2.9. Identify and explain tripping procedures to crew and apply in accordance with company requirements 2.10. Determine and implement correct ***communications*** and ***record keeping*** procedures for air drilling operations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to coordinate air drilling operations:

- apply legislative, organisation and site requirements and procedures for coordination of air drilling operations
- discuss and apply drilling concepts and methods
- apply air drilling procedures
- explain and describe the uses of air drilling package components
- apply emergency response procedures
- apply Job Safety Analysis (JSA)
- perform calculations including:
  - annular velocity
  - sinking/slipping velocity
  - pressure
  - flow test procedure
  - volume
  - conversion between metric and imperial
  - use of a calculator

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to coordinate air drilling operations:

- air drilling concepts and methods, advantages and disadvantages
- conventional mud drilling concepts and methods, advantages and disadvantages
- emergency response plan for air drilling operations
- pressure volume requirements
- air requirements
- dust drilling
- mist drilling
- stiff foam drilling
- aerated mud
- air drilling procedures
- emergency response
- Job Safety Analysis (JSA)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for coordination of air drilling operations • implementation of requirements, procedures and techniques for the safe, effective and efficient coordination of air drilling operations • working with others to plan, prepare and coordinate air drilling operations • evidence of the consistent successful coordination of air drilling operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the coordination of air drilling operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the coordination of air drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures including:
	  • (PSLA) Petroleum Submerged Lands Act
	  • duty of care
	  • daily pre-tour checklists
	  • pre-drilling checklists
	• manufacturer's guidelines and specifications
	• Australian standards
	• code of practice
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• communication through:
	  • safety briefing/induction
	  • pre-tour safety meeting
	  • weekly safety meetings
	  • Job Safety Analysis (JSA)
	  • agreed procedures including:
	• company
	• facility
	• client
	• individual operation
	• team operation
	• use of personal protective equipment
	• consideration of H2S and other toxic substances
	• maintaining continuous communication
	• reacting to on-site emergencies
	• nature and scope of tasks
	• specifications
	• quality of finished works
	• achieved targets
	• operational conditions

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	• obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig • working in different conditions including: • night time operations • day time operations • potential for bushfires if flaring gas • hot climates • cold climates • wet weather conditions • high wind
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Communication channels may include:	• 2-way radio • hand signals • telephone • public address system • written work instructions • internet and intranet
Record keeping may include:	• daily tour sheets

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIOGD405A Carry out well control and blow out prevention

Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of well control and blow out prevention in the drilling industry. It includes: managing well control strategies; assessing well control equipment and reporting and recording faults; and carrying out well kill operations.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, in coal-seam methane gas drilling operations worksites, within:

- Coal mining
- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Manage well control strategies	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify ***hazards***, and assess and manage risks associated with well control operations under varying ***working conditions*** 1.3. Calculate mud weight, pressure losses, drill stem and annular volumes, MAASP and initial and final circulating pressures 1.4. Identify interpret and respond to the ***early warning signs*** of kicks and well going under-balance while drilling 1.5. Recognise ***kick indicators*** and apply kick detection methods and responses during well control operations
2. Assess well control equipment and report and record faults	2.1. Identify the purpose, use and relationship between ***equipment***, indicators, counters and detection systems to determine fitness of equipment for well control. 2.2. Identify flow paths for normal drilling operations and well control from appropriate sources 2.3. Identify and apply ***well-control testing procedures*** and principles in accordance with company/regulatory requirements 2.4. Perform primary equipment failure well shut-in procedures in accordance with company/regulatory requirements 2.5. Conform to safe ***working practices*** and operational requirements
3 Carry out well kill operations	2.6. ***Brief*** crew on well control procedures 2.7. Identify and apply appropriate pre-recorded information. 2.8. Check, read, interpret and record pressures and gauges and undertake ***corrective action*** 2.9. Determine and apply well kill procedures 2.10. Demonstrate correct application of trip kill sheet data and well-closure procedure when dealing with influx and shutting in a well 2.11. Calculate hydrostatic head at

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	specific depths, and apply correct procedure when observing loss of circulation. 2.12. Perform correct tripping methods and tests in accordance with company/regulatory requirements. 2.13. Apply stripping methods in accordance with operating requirements. 2.14. Apply ***recording and reporting*** procedures in accordance with regulations and company policies/procedures 2.15. ***Manage*** and ***communicate*** with crew during well control incident

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following, as required, to carry out well control and blow out prevention:

- apply legislative, organisation and site requirements and procedures
- work in a team
- take measurements such as:
  - penetration rate
  - circulating pressure
  - rotary torque
  - active surface volume
  - frequency
  - pump pressure
- make calculations and estimations such as:
  - pressure
  - density
  - volume
  - height
  - velocity
  - length
  - weight
- interpret gauges, graphs
- detect kick warning signs and indicators
- complete trip sheets
- complete kill sheets

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to carry out well control and blow out prevention:

- risk management related to well control
- well control procedures and their application
- function, operation, maintenance and use of well control and auxiliary equipment
- causes, effects and response to equipment failures
- drilling parameters and their interpretation

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- measuring and testing device purpose and operation
- calculations necessary for well control procedures
- kick detection warnings and indications and the responses to them
- kill methods and procedures
- managing well control crew requirements
- well control emergency drills
- effects of swabbing and surging
- pressure concepts and effects
- formation integrity
- influx parameters
- safe well shut-in procedures
- tripping requirements and techniques
- constant bottom hole pressure method
- accumulator
- type, format and implementation of well control documentation

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the carrying out of well control and blow out prevention • implementation of appropriate procedures and techniques for the safe, effective and efficient well control and blow out prevention • working with others to plan, prepare and conduct well control and blow out prevention • provision of clear and timely instruction and supervision by the individual of those involved in carrying out of well control and blow out prevention • evidence of the consistent successful well control and blow out prevention
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct well control and blow out prevention
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the well control and blow out prevention

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazards may include:	• blow out gas to surface • ignition of gas • toxic gases • pressurised coal seam gas system
Working conditions may include:	• night time operations • day time operations • hot climates • cold climates • snow • wet weather conditions • high wind
Early warning signs may be:	• rate of penetration trends • drilling break • trends shown in torque/drag
Kick indicators may include:	• flow from wells (pump off) • increase in flow from well (pumps on) • pit volume gain
Equipment may include:	• mud system • blow out preventer • manifolds and chokes • accumulator • degassers • monitors • diverters
Well-control testing procedures	• to be identified

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may include:	
Working practices may include:	• industry best practice • confirmation of shut-in • monitoring of shut-in pressures • monitoring of accumulator pressures • correct SPM to be maintained during kill • monitoring pump efficiency • individual operation • team operation • use of personal protective equipment • consideration of H_2S and other toxic substances • consideration of flammables and ignition sources • maintaining continuous communication • reacting to on-site emergencies
Briefing of crew may include:	• time of well shut-in • initial shut-in pressures • kill sheets • stage of kill • type of kill procedure employed • status of well control equipment • flow path for well control method • safety briefing/induction • pre-tour safety meeting • weekly safety meetings • job safety analysis (JSA) • agreed procedures including: • company • facility • client
Corrective action may include:	• changing over pumps in the event of primary failure • using secondary choke in the event of primary failure • using alternate preventer in the event of primary failure • running accumulator emergency backup in case of primary failure
Operational instructions may include:	• type of kill procedure to use • type of shut-in procedure to use • action to be taken in the event of approaching

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	MAASP • monitoring pit levels
Recording and reporting documents may include:	• specifications • operator's instructions • drilling program • technical information • relevant legislation • industry regulations • government requirements • daily pre-tour checklist • daily pre-drilling checklist • AP RP 53 • tour sheet • tour reports and drilling logs • kill sheet • incident report form • drilling line record sheet • shut-in procedures • weekly safety meeting report • equipment damage report
Managing crew during well control incident may include:	• informing subordinates of their roles and responsibilities in a well control situation • observing and reacting on the performance of subordinates that falls below acceptable levels • assessing crew performance to ensure competent handling of well control situations • communicating potential problems to the crew and taking necessary actions • instructing the crew to take up their assigned positions during well kill • allocating personnel assignments to increase the fluid density and handle the resulting increased volumes during the well kill
Communication channels may include:	• 2-way radio • hand signals • telephone • public address system • written work instructions • internet and intranet

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Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD406A Shut down rig

Modification History

Not applicable.

Unit Descriptor

This unit covers shutting down the rig in the drilling industry. It includes planning and preparing to shutdown rig, and rig-out to stack. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for shutting down the rig	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Receive and follow ***equipment*** maintenance/servicing requirements.
2. Rig-out to stack	2.1. Make preparations to move and/or stack rig in accordance with procedures for each rig 2.2. Undertake rig-out to stack in accordance with regulations and company policies/procedures 2.3. Apply and comply with all occupational health and safety and security strategies during rig-out operations 2.4. Complete all reports and records and submit to appropriate personnel

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to shutdown the rig:

- apply legislative, organisation and site requirements and procedures for shutting down the rig
- apply delegation techniques
- apply effective communication skills
- apply problem solving techniques
- apply contingency planning requirements and procedures
- oversee rigging operations

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to shutdown the rig:

- truck weight restrictions
- rig specifications
- forklift operations and limitations when supervising operations
- permit requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for shutting down the rig • implementation of requirements, procedures and techniques for the safe, effective and efficient shutting down of the rig • working with others to plan, prepare and shut down the rig • evidence of the consistent successful shutting down of the rig
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the shutting down of the rig
	  • provision of clear and timely instruction and supervision by the individual of those involved in the shutting down of the rig

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures including:
	  • shutdown list
	  • environmental guidelines
	  • load list
	  • vehicle escort guidelines
	  • permit guidelines
	  • shutdown lists
	  • maintenance lists
	  • site requirements
	  • safety procedures
	  • Job Safety Analysis (JSA)
	  • relevant safety alerts
	• manufacturer's guidelines and specifications
	• Australian standards
	• code of practice
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation
	• local authorities permits and guidelines

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• communication through
	  • 2-way radio
	  • hand signals
	  • telephone
	  • public address system
	  • written work instructions
	  • internet and intranet
	• handover with oncoming driller
	• safety briefing/induction
	• pre-tour safety meeting
	• weekly safety meetings
	• Job Safety Analysis (JSA)

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	• agreed procedures including:
	  • company
	  • facility
	  • client
	• rig manager's shutdown instructions, including preparations for return of rental equipment

Hazards may include:	• working in proximity to drilling rig
	• working in different conditions including:
	  • night time operations
	  • day time operations
	  • hot climates
	  • cold climates
	  • wet weather conditions
	  • high wind

Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Equipment, including rental equipment, may include:	• non-magnetic drill collars • string stabilisers • stabiliser inserts • drill bits • accommodation and/or office facilities • personnel entertainment equipment

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD501A Manage rig operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the management of rig operations in the drilling industry. It includes planning and preparing for managing rig operations, establishing a lease, and communicating and reporting outcomes. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for managing rig operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Obtain copy of well program for next well from company representative or office prior to moving on to lease 1.6. Read and interpret well program and check all necessary contractor-supplied ***equipment*** availability and rectify anomalies 1.7. Check for casing discrepancies or obvious mistakes and take corrective action 1.8. Liaise with company representative if changes are required to program 1.9. Inform office of all required or possible changes to program
2. Establish lease	2.1. Obtain lease details and locate and inspect lease 2.2. Inform construction company of lease details including all infrastructure arrangements 2.3. Make contact with owners and statutory bodies to ensure compliance with regulations 2.4. Establish, check and ***communicate*** directions to lease 2.5. Establish right-of-way to lease, identify, rectify potential problems and communicate to appropriate personnel, third parties and regulators 2.6. Establish camp location, check infrastructure/safety arrangements and rectify, if required 2.7. Check supply sources and expendables and make adjustments, if required

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	2.8. Establish medical aid and medivac procedures and communicate to personnel and appropriate authorities 2.9. Organise camp supplies prior to camp set-up and make necessary arrangements for transporting of requisites, if required 2.10. Put in place rubbish/waste disposal arrangements
3. Communicate and report outcomes	3.1. Confirm lease establishment information with appropriate personnel, third parties and regulators and submit ***reports*** 3.2. Review, update and implement contract information for pre-well preparation 3.3. Report new lease data to appropriate officers using correct reporting strategies 3.4. Review and amended shutdown procedures and if required communicated to relevant parties

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to manage rig operations:

- apply legislative, organisation and site requirements and procedures for managing rig operations
- carry out and manage rig operations
- communicate in written and verbal forms at all operating levels
- plan and organise
- work with others
- solve logistic problems
- establish and report new lease arrangements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to manage rig operations:

- rig loading
- spotting loads
- rig up procedures
- safety procedures
- human management skills
- lease preparation
- logistics

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for managing rig operations • implementation of requirements, procedures and techniques for the safe, effective and efficient management of rig operations • working with others to plan, prepare and conduct the management of rig operations • evidence of the consistent successful management of rig operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the management of rig operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in managing rig operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • road permits • environmental plans • heritage concerns • operator environment plan • Petroleum Submerged Lands Act (PSLA) • duty of care • contracts • State/Territory Petroleum Acts • site specific manuals • quality assurance manual
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • well program • stacking procedure • start-up procedure • outstanding orders • occupational health and safety/environmental plan • safety briefing/induction • pre-tour safety meeting • weekly safety meetings • Job Safety Analysis (JSA) • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits

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	• site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements

Hazards may include:	• working in proximity to drilling rig
	• working with trucks, cranes, winch trucks and forklift
	• H2S and other toxic substances
	• working in different conditions including:
	  • night time operations
	  • day time operations
	  • hot climates
	  • cold climates
	  • wet weather conditions
	  • high wind

Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Equipment may include:	• rig and camp • trucks • vehicles • cranes/forklift/winch trucks • backhoe/digger
Communicate may refer to using:	• hand signals • telephone • public address system • computer • fax • face to face • written documentation • 2-way radio and radio network • satellite phones • internet and intranet May be with:

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	• crew • management • construction company • operator's representative • company representative • suppliers • ambulance service • doctors/medicos
Reports or records may include:	• daily drilling report • equipment damage/failure report • material requisition form • plant movement advice • materials and services received (report) • gas bottle returns • third party hire and monthly stock lists • change over notes • employee time sheets • meal and bed sheet • fire extinguisher checklist • monthly tubular summary

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD502A Plan and evaluate rig operations

Modification History

Not applicable.

Unit Descriptor

This unit covers planning and evaluating rig operations in the drilling industry. It includes preparing for planning and evaluating rig operations, establishing risk management strategies, and implementing the rig safety compliance system. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for planning and evaluating rig operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Identify financial/insurance implications of non-conformance and notify appropriate personnel/authorities
2. Establish risk management strategies	2.1. Identify role and legal responsibilities of rig managers, supervisors and personnel and put appropriate measures in place to manage such responsibilities 2.2. Examine use of regulations, code of practice and specific site manuals and implement appropriate processes 2.3. Make arrangements to provide information in a language, style and format which is understood by all parties 2.4. Understand audit of potential workplace hazards, evaluate findings and implement correct control measures and communicate to personnel and appropriate authorities 2.5. Establish ***communication*** and on-site meeting processes for resolving safety issues and communicate to personnel and appropriate authorities 2.6. Evaluate rig performance and discuss with client and review operational requirements and implement changes if required 2.7. Identify and implement coaching and mentoring arrangements and design appropriate training strategies to rectify performance issues
3. Implement rig safety compliance system	3.1. Identify and implement communication requirements and communicate to all parties 3.2. Identify and demonstrate radio

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	communication strategies and reporting techniques to all parties 3.3. Monitor, adjust and report health, safety and environmental performance to appropriate personnel/authorities 3.4. Maintain systems, records and reporting procedures 3.5. Investigate non-conformances and report and deal with according to company and/or legislative requirements 3.6. Implement workplace measures to ensure that non-conformance is not repeated

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to plan and evaluate rig operations:

- apply legislative, organisation and site requirements and procedures for planning and evaluating rig operations
- apply and monitor rig performance in line with regulatory requirements
- communicate verbal and written instructions/outcomes at all operating levels
- apply appropriate software applications
- identify, assess, control and report hazards/situations
- maintain monitoring systems
- counsel personnel

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to plan and evaluate rig operations:

- Petroleum Act
- Environmental Protection Act
- Occupational Health and Safety Act
- confined space entry
- investigation procedures
- evaluation techniques
- reporting techniques
- monitoring systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for planning and evaluating rig operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of planning and evaluating rig operations • working with others to plan and evaluate rig operations • evidence of the consistent successful planning and evaluating rig operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake planning and evaluating rig operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in planning and evaluating rig operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • occupational health and safety (OHS) • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • Environmental Protection Act • WorkCover • confined space entry legislation • Petroleum Submerged Lands Act (PSLA) • duty of care
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• adhering to environmental plan • hazard identification • outstanding environmental incident reports • rig manager handover notes • permit to work register • safety review committee • safety briefing/induction • pre-tour safety meeting • weekly safety meetings • Job Safety Analysis (JSA)

Hazards may include:	• working in proximity to drilling rig
	• working in different conditions including:
	  • night time operations
	  • day time operations
	  • hot climates
	  • cold climates
	  • wet weather conditions
	  • high wind

Coordination requirements may	• other equipment operators

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include:	• maintenance personnel • supervisors • site personnel
Communication may include using:	• 2-way radio • hand signals • telephone • public address system • written work instructions • internet and intranet

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD503A Oversee drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers overseeing drilling operations in the drilling industry. It includes planning and preparing to oversee drilling operations, organising drilling of surface hole, supervising and participating in nippling up and pressure testing, organising rig up and rig up to spud, and completing and abandoning well. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for overseeing drilling operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Organise drilling of surface hole	2.1. Obtain copies of contract and well program, check and implement strategies designed and ***communicate*** to all parties 2.2. Obtain and check correct equipment and tools are on hand for surface hole operations 2.3. Check integrity of equipment and prepare/inspect casing and joints for damage 2.4. Maintain ***records*** and liaise with service companies to rectify faults 2.5. Ensure that appropriate equipment and personnel are on hand for casing
3. Supervise and participate in nippling up and pressure testing	3.1. Organise equipment and nippling-up requirements for drilling out 3.2. Ensure pressure testing of all BOP equipment is carried out 3.3. Ensure rig up to drill out is carried out in accordance with procedure 3.4. Monitor drill out safety processes and test gauge leak off as required
4. Organise rig up and rig up to spud	4.1. Assign crews to specific jobs and implement performance measures to monitor operations 4.2. Put appropriate monitoring strategies and checks in place to ensure integrity of operations 4.3. Check all specific instructions with operator's representative for drilling hole 4.4. Conduct crew meetings on total rig safety requirements

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	4.5. Report/rectify damage as required 4.6. Ensure mud is mixed in accordance with procedures and properties defined in the drilling program 4.7. Carry out pre-spud safety inspections with circulation and spud-in established 4.8. Undertake surveys and report any deviations to operator's representative and record on appropriate documentation 4.9. Supervise running in and cementing of casing with operator's written instructions being followed
5. Complete and abandon well	5.1. Supervise completion and well abandonment with operator's representative 5.2. Make preparations to release rig and arrange shutdown preparation list 5.3. Arrange servicing, repair and/or return of equipment through appropriate channels 5.4. Abandon well in accordance with legislative, operator and company requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to oversee drilling operations:

- apply legislative, organisation and site requirements and procedures for overseeing drilling operations
- apply BOP specifications
- select and utilise correct drilling equipment
- apply drilling specifications
- apply legislation and acts
- nipple-up and pressure test within specifications
- rig up to spud
- coordinate drill team
- carry out numerical calculations including:
  - addition, subtraction, multiplication, division
- relate normal pressure to temperature
- using calculator if required
- using estimated skills (e.g. mental arithmetic, visualisation of size and quantity)
- basic geometry (e.g. interpreting depth, direction)
- use of metric and imperials and conversion between the two
- interpreting of gauges, graphs etc
- calculations relating to pressure (hydrostatic, surface, downhole, circulating), density, volume (fluid, air, gas), height, velocity, length, weight
- measurements (penetration rate, rotary torque, rpm, pump pressure
- drill out of hole in accordance with procedures
- abandon well activity to procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to oversee drilling operations:

- BOP specifications
- casing tools and their applications
- inspection and reporting procedures and practices
- equipment types and uses
- occupational health and safety/environmental obligations

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- nippling-up and pressure testing techniques
- pressures
- drill out procedures
- testing
- rig up to spud procedure
- drilling programs
- run in and cementing procedures
- well abandonment and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for overseeing drilling operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of overseeing drilling operations • working with others to plan, prepare and oversee drilling operations • evidence of the consistent successful overseeing of drilling operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and oversee drilling operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in overseeing drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • Petroleum Submerged Lands Act (PSLA) • duty of care
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• consideration of H2S and other toxic substances • reacting to on-site emergencies • nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements • safety briefing/induction • pre-tour safety meeting • weekly safety meetings • Job Safety Analysis (JSA)
Hazards may include:	• working in proximity to drilling rig • working in different conditions including:

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	• night time operations • day time operations • hot climates • cold climates • wet weather conditions • high wind
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel • continuous communication maintained • team operation
Records may include:	• daily drilling report • equipment damage/failure report • material requisition form • plant movement advice • materials and services received (report) • gas bottle returns • third party hire and monthly stock lists • change over notes • employee time sheets • drilling rate sheet • meal and bed sheet • fire extinguisher checklist • monthly tubular summary
Communicate may include by:	• 2-way radio • hand signals • telephone • public address system • written work instructions • internet/intranet ***May be between***: • crew • service companies • operator's representative

Unit Sector(s)

Drilling (Oil and Gas)

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD504A Manage drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers managing drilling operations in the drilling industry. It includes planning and preparing for managing drilling operations, implementing drill management strategies, managing occupational health and safety obligations, overseeing drilling operations. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for managing drilling operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Implement drill management strategies	2.1. Obtain and check copies of contract and well program, design implementation strategies and ***communicate*** to all parties 2.2. Prepare daily drilling reports and tour sheets and communicate to all parties 2.3. Undertake inspections of operating site and camp and record/ report 2.4. Establish ***communication*** strategies and confirm with operator's representative 2.5. Review and confirm legislative/company requirements and communicate to appropriate personnel 2.6. Put appropriate ***reporting mechanisms*** in place 2.7. Establish rig maintenance arrangements and communicate to all parties
3. Manage occupational health and safety obligations	3.1. Put in place and carry out crew meeting arrangements, minute outcomes and report to appropriate officers 3.2. Establish, implement, monitor and record/report safety inspection strategies 3.3. Induct new employees into site operations and put appropriate monitoring strategies in place 3.4. Establish, implement, monitor and record/report permit-to-work systems 3.5. Identify and implement emergency response arrangements and communicate to all parties 3.6. Identify, implement and monitor environmental legislative/ company

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	requirements and rectify or report 3.7. Identify, rectify and report non-conformances to appropriate authorities/officers
4. Oversee drilling operations	4.1. Obtain and check drill program and communicate to appropriate officers/personnel 4.2. Organise drilling tools and equipment and put appropriate checking processes in place 4.3. Put in and monitor appropriate reporting mechanisms 4.4. Assess safe work practices and adherence to ***drilling instructions*** and rectify if required 4.5. Implement, maintain and monitor well control and blowout prevention strategies and report 4.6. Carry out and monitor appropriate tests and report

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to manage drilling operations:

- apply legislative, organisation and site requirements and procedures for managing drilling operations
- manage rig operation and performance
- communicate at all levels of operations
- identify, assess, control and report hazards/situations
- control downhole problems
- carry out numerical calculations including:
  - addition, subtraction, multiplication, division
  - relate normal pressure to temperature
  - using calculator if required
  - using estimated skills (e.g. mental arithmetic, visualisation of size and quantity)
  - basic geometry (e.g. interpreting depth, direction)
  - use of metric and imperials and conversion between the two
  - interpreting of gauges, graphs etc
  - calculations relating to pressure (hydrostatic, surface, downhole, circulating), density, volume (fluid, air, gas), height, velocity, length, weight
  - measurements (penetration rate, rotary torque, rpm, pump pressure
- coordinate and delegate
- apply occupational health and safety/environmental regulations
- budget and monitor operating costs

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to manage drilling operations:

- document control
- operational procedures
- legislative requirements
- maintenance
- safety
- well control
- downhole problems and solutions

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for managing drilling operations • implementation of requirements, procedures and techniques for the safe, effective and efficient management of drilling operations • working with others to plan, prepare and manage drilling operations • evidence of the consistent successful management of drilling operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the management of drilling operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the management of drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • Petroleum Submerged Lands Act (PSLA) • duty of care • occupational health and safety (OHS) • Environmental Protection Act • Workplace Relations Act • union awards
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• employee mentoring • driller training • ongoing supervisor for hazard identification • close surveillance of new employees • nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements • rig manager change over notes

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	• safety briefing/induction • morning reports • pre-tour safety meeting • pre-spud meetings • weekly safety meetings • Job Safety Analysis (JSA)

Hazards may include:	• working in proximity to drilling rig
	• working in different conditions including:
	  • night time operations
	  • day time operations
	  • hot climates
	  • cold climates
	  • wet weather conditions
	  • high wind

Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel • continuous communication maintained • team operation
Communicate may be via:	• 2-way radio • hand signals • telephone • public address system • written work instructions • internet and intranet
Communication may be between:	• crew • service companies • operator's representative
Reporting mechanisms may include:	• daily drilling report • equipment damage/failure report • material requisition form • plant movement advice • materials and services received (report) • gas bottle returns • third party hire and monthly stock lists • change over notes • employee time sheets • drilling rate sheet • meal and bed sheet • fire extinguisher checklist

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	• monthly tubular summary
Drilling instructions may include:	• issues highlighted in pre-spud safety inspector • aspects of drilling program that detail contractor liability • drilling parameters • maintenance requirements

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD505A Manage drilling induction and orientation

Modification History

Not applicable.

Unit Descriptor

This unit covers the management of drilling induction and orientation in the drilling industry. It includes planning and preparing to manage drilling induction and orientation, examining general safety practices, communicating first aid/emergency response arrangements, and examining general safety practices.
Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare to manage drilling induction and orientation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Examine general safety practices	2.1. Obtain and review policies/procedures in relation to alcohol, drugs and firearms/weapons and ***communicate*** to all parties 2.2. Develop chain of command and ***communication*** strategies and communicate to all parties 2.3. Put hazard identification, reporting and ***recording mechanisms*** in place and communicate requirements to all parties 2.4. Assess personal protective equipment and procedures and put procedures in place to communicate and monitor adherence to legislative/company requirements 2.5. Identify hazardous materials handling and transport arrangements and establish and communicate procedures to manage and prevent uncontrolled/unauthorised release 2.6. Put hazardous energy control and fire safety procedures in place and communicate responsibilities to all parties 2.7. Identify mechanical equipment and manual handling hazard control measures and establish and communicate procedures to avoid non-conformance 2.8. Discuss rig working and living conditions including work rosters and camp rules
3. Communicate first aid/emergency response arrangements	3.1. Identify first aid requirements and discuss with all parties 3.2. Identify and highlight dangers associated with the use of first aid applications 3.3. Identify blood borne pathogens and

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	precautions to identify contamination and convey to all parties 3.4. Identify different types of alarms, their uses and authorisations and communicate to all parties
4. Examine general safety practices	4.1. Obtain and review policies/procedures in relation to alcohol, drugs and firearms/weapons and communicate to all parties 4.2. Develop chain of command and communication strategies and communicate to all parties 4.3. Put hazard identification, reporting and recording mechanisms in place and communicate requirements to all parties 4.4. Assess personal protective equipment and procedures and put procedures in place to communicate and monitor adherence to legislative/company requirements 4.5. Identify hazardous materials handling and transport arrangements and establish and communicate procedures to manage and prevent uncontrolled/unauthorised release 4.6. Put hazardous energy control and fire safety procedures in place and communicate responsibilities to all parties 4.7. Identify mechanical equipment and manual handling hazard control measures and establish and communicate procedures to avoid non-conformance 4.8. Discuss rig working and living conditions including work rosters and camp rules

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to manage drilling induction and orientation:

- apply legislative, organisation and site requirements and procedures for managing drilling induction and orientation
- verbal and written communication
- accurate reporting
- safely operate drilling rig (e.g. stand in for driller)
- show leadership in critical situations

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to manage drilling induction and orientation:

- all operational procedures (safe practice)
- award entitlements (e.g. overtime)
- safe working practice
- human management skills
- company reporting procedures
- general mechanical/electrical operating functions
- down-hole problems and solutions
- drills (e.g. fire, BOP, gas detection)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for managing drilling induction and orientation • implementation of requirements, procedures and techniques for the safe, effective and efficient management of drilling induction and orientation • working with others to plan, prepare and manage drilling induction and orientation • evidence of the consistent successful management of drilling induction and orientation
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the management of drilling induction and orientation
	  • provision of clear and timely instruction and supervision by the individual of those involved in the management of drilling induction and orientation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • Petroleum Submerged Lands Act (PSLA) • duty of care

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• names of inductees
	• level of induction (e.g. experienced or green hands)
	• presentation aids:
	  • signs
	  • schematics
	  • videos etc
	• safety briefing/induction
	• pre-tour safety meeting
	• weekly safety meetings
	• where to go in an emergency - muster points
	• acceptable smoking area
	• out of bounds areas (e.g. SCR shack)
	• safe practice
	• 12 hour shifts
	• 14 day/21 day roster
	• individual operation
	• team operation
	• use of personal protective equipment
	• consideration of H2S and other toxic substances
	• continuous communication maintained
	• reacting to on-site emergencies

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Hazards may include:	• working in proximity to drilling rig
	• working in different conditions including:
	  • night time operations
	  • day time operations
	  • hot climates
	  • cold climates
	  • wet weather conditions
	  • high wind

Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Communicate may be via:	• 2-way radio • hand signals • telephone • public address system • written work instructions • internet and intranet
Communication may be between:	• crew • service companies • operator's representative
Reporting mechanisms may include:	• location arrival procedures • work permits • trip (vehicle) report

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD506A Manage rig move and camp move

Modification History

Not applicable.

Unit Descriptor

This unit covers managing the rig out and camp move in the drilling industry. It includes planning and preparing for managing rig move and camp move, establishing rig removal arrangements, loading out and moving. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for managing rig move and camp move	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Establish rig removal arrangements	2.1. Check, confirm and ***communicate*** drill rig movement and new location arrangements with company officers 2.2. Make arrangements to gain statutory/local authority permission to move site and ***equipment*** 2.3. Establish and follow a checklist of removal arrangements 2.4. Make arrangements with transport company for rig removal 2.5. Check right-of-way to new lease and confirm with appropriate parties 2.6. Conduct pre-rig move safety meetings to ensure safe operation
3. Load out and move	3.1. Confirm transport arrangements and directions to new lease 3.2. Apply correct rigging practices for rig removal and loading 3.3. Brief crews, assign specific tasks and monitor operations 3.4. Monitor rig/camp move and complete and forward reports to appropriate parties

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to manage rig move and camp move:

- apply legislative, organisation and site requirements and procedures for managing rig move and camp move
- interact at all levels
- prioritise
- plan
- problem solve
- time management
- read a map

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to manage rig move and camp move:

- work safe practices
- rigging and slinging
- rig and camp layouts
- environmental concerns

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for managing rig move and camp move • implementation of requirements, procedures and techniques for the safe, effective and efficient management of rig move and camp move • working with others to plan, prepare and manage rig move and camp move • evidence of the consistent successful management of rig move and camp move
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the management of rig move and camp move
	  • provision of clear and timely instruction and supervision by the individual of those involved in the management of rig move and camp move

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • occupational health and safety (OHS) • oversize permits • state road rules and regulations • weight loading • environment • Petroleum Submerged Lands Act (PSLA) • duty of care
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• rig and camp load lists • order of rig move • distance and road conditions • issues of concern if power line, bridges • weather conditions • time frames • securing of loads • safety briefing/induction • pre-tour safety meeting • weekly safety meetings • pre-job safety meeting • check of lifting equipment • wearing of personal protective equipment • sequence of loads • team operations
Hazards may include:	• working in proximity to drilling rig • working in different conditions including: • night time operations

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	• day time operations • hot climates • cold climates • wet weather conditions • high wind
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Equipment may include:	• mounted trailers • cranes • forklifts • water/fuel trucks • waste disposal trucks • maps • signage
Communicate may be via:	• 2-way radio • hand signals • telephone • public address system • written work instructions • internet and intranet ***May be between***: • crew • transport companies • relevant statutory or local authorities • company personnel

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIOGD507A Manage and monitor rig-up and rig-up to spud operations

Modification History

Not applicable.

Unit Descriptor

This unit covers managing and monitoring rig-up and rig-up to spud operations in the drilling industry. It includes Plan and prepare to manage and monitor rig-up and rig-up to spud operations, commencing operations, preparing to spud, and conducting pipe installation/mix mud. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare to manage and monitor rig-up and rig-up to spud operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Commence operations	2.1. Assess rig up and rig up to spud program and ***communicate*** details 2.2. Identify number and expertise of personnel required and obtained 2.3. Assign crews tasks and supervise performance 2.4. Assess safety requirements and communicate to all parties 2.5. Undertake ***equipment*** checks and rectify/report faults in accordance with legislative/company requirements 2.6. Establish rig/lease drainage and effluent disposal 2.7. Supervise spotting and rig assembly and rectify performance issues 2.8. Arrange and supervise engine power start-up
3. Prepare to spud	3.1. Supervise installation of rathole, mousehole and conductor pipe, if required 3.2. Reinforce mud preparation and environmental requirements with crew members 3.3. Confirm circulation and rig up are with crew 3.4. Undertake pre-spud safety inspection and confirm with crew to ensure compliance with regulatory/company requirements
4. Conduct pipe installation/mix mud	4.1. Complete tour sheet incorporating depth of auguring, monitor drilling/auguring processes and identify/report problems 4.2. Assess availability of correct casing and

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	casing tools and rectify for anomalies 4.3. Establish flowline and conductor pipe requirements and put in place 4.4. Check and approve integrity of cement for application, to guard against washout 4.5. Supervise nippling up flowline and operations 4.6. Establish and monitor circulation and spud in 4.7. Check mud mixing procedures and properties against drilling program and confirm with crew 4.8. Record operating outcomes and report to appropriate officers

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to manage and monitor rig-up and rig-up to spud operations:

- apply legislative, organisation and site requirements and procedures for managing and maintaining rig-up and rig-up to spud operations
- operate rig components
- oversee forklift operations
- use satellite or ground communication
- issue permits and work orders
- organise work teams into efficient working units
- dog a crane and secure rigging
- troubleshoot breakdowns

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to manage and monitor rig-up and rig-up to spud operations:

- rig up procedures
- rigging and dogging practices
- auxiliary equipment functions and service requirements
- specific auxiliary rig up sequence
- safety and environmental issues
- communication equipment
- emergency procedures
- preventative maintenance
- workplace relations and award conditions

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for managing and monitoring rig-up and rig-up to spud operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of management and monitoring of rig-up and rig-up to spud operations • working with others to plan, prepare manage and monitor rig-up and rig-up to spud operations • evidence of the consistent successful management and monitoring of rig-up and rig-up to spud operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the management and monitoring of rig-up and rig-up to spud operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the management and monitoring of rig-up and rig-up to spud operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • occupational health and safety (OHS) • environmental protection • permit to work • Petroleum Submerged Lands Act (PSLA) • duty of care
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• pre-start safety meetings prior to commencement of each work day • delegation of work responsibilities to various teams • priority given to tasks if necessary • emergency services contacted to inform of new location and approximate period of occupancy • drilling program • safety procedures • environmental considerations • completion sequence • well head preparation • preparation and inspection of loading slings and chains • material availability if maintenance, servicing or repair is to occur • smoking restrictions • safety briefing/induction • Job Safety Analysis (JSA) • pre-tour safety meeting

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	• weekly safety meetings • nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements

Hazards may include:	• working in proximity to drilling rig
	• working in different conditions including:
	  • night time operations
	  • day time operations
	  • hot climates
	  • cold climates
	  • wet weather conditions
	  • high wind

Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Communicate may include by:	• 2-way radio • hand signals • telephone • public address system • written work instructions • internet/intranet
Equipment may include:	• cranes • front-end loaders using bucket or forks • winch trucks • prime movers with trailers and dog trailers • carrier mounted rigs and service units

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Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD508A Manage well completion and abandonment

Modification History

Not applicable.

Unit Descriptor

This unit covers managing the completion and abandonment of wells in the onshore drilling industry. It includes planning and preparing for managing well completion and abandonment, organising the completion schedule, and completing well abandonment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for managing well completion and abandonment	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Organise completion schedule	2.1. Develop completion schedule in line with drilling contract and well prognosis 2.2. Review and confirm lease details, as necessary notifications are forwarded to statutory, company, owner and contractor representatives 2.3. Make preparations for release of rig and complete tour book records in accordance with statutory and company requirements 2.4. Ensure that prior to rig move, arrangements are in place for work orders and invoicing in line with contract requirements and servicing/maintenance repairs of ***equipment***
3. Complete well abandonment	3.1. Make preparations to stack and move and ***communicate*** to all parties 3.2. Assess environmental plan and that mud drilling fluids and waste storage/disposal requirements and correct *records* are completed and processed 3.3. Prepare shutdown list in accordance with statutory/company requirements and distribute to crew for actioning 3.4. Rig down in accordance with statutory/company requirements and distribute to crew for actioning 3.5. Rig down ensuring that equipment, camp and rig are secured for removal 3.6. Review contract requirements, complete records and forward to appropriate officers

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to manage well completion and abandonment:

- apply legislative, organisation and site requirements and procedures for managing well completion and abandonment
- operate rig components
- oversee forklift operations
- use satellite or ground communication
- issue permits and work orders
- organise work teams into efficient working units
- dog a crane and secure rigging
- troubleshoot breakdowns

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to manage well completion and abandonment:

- well completion or abandonment procedures
- rigging and dogging practices
- auxiliary equipment functions and service requirements
- specific rig tear-out sequence
- road haulage regulations
- safety and environmental issues
- communication equipment
- emergency procedures
- preventative maintenance
- workplace relations and award conditions

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for managing well completion and abandonment • implementation of requirements, procedures and techniques for the safe, effective and efficient management of well completion and abandonment • working with others to plan, prepare and manage well completion and abandonment • evidence of the consistent successful management of well completion and abandonment
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the management of well completion and abandonment
	  • provision of clear and timely instruction and supervision by the individual of those involved in the management of well completion and abandonment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • licence checks • load permits • decontamination certificates if moving between quarantine areas
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• pre-start safety meetings prior to commencement of each work day • delegation of work responsibilities to various teams re: load-out or rig-up • set route for rig move • emergency procedures to follow if lost or disabled • road conditions • new location whereabouts and access • name of property owners (where applicable) • safety procedures • environmental considerations • completion sequence • well head preparation • preparation and inspection of loading slings and chains • material availability if maintenance, servicing or repair is to occur • nature and scope of tasks • specifications • quality of finished works • achieved targets

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	• operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements

Hazards may include:	• working in proximity to drilling rig
	• working in different conditions including:
	  • night time operations
	  • day time operations
	  • hot climates
	  • cold climates
	  • wet weather conditions
	  • high wind

Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Equipment may include:	• cranes • front-end loaders using bucket or forks • winch trucks • prime movers with trailers and dog trailers • carrier mounted rigs and service units
Communicate may include by:	• 2-way radio • hand signals • telephone • public address system • written work instructions • internet/intranet
Records may include:	• tour book • request of materials received • transport manifests

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Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGD601A Manage multiple drilling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the management or multiple drilling operations in the drilling industry. It includes planning and preparing to manage multiple drilling operations, coordinating resource use to achieve profit productivity targets, acquiring resources to achieve operational plan, and monitoring operational performance of drill supervisors and drilling operations. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare to manage multiple drilling operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Coordinate resource use to achieve profit productivity targets	2.1. Collect, analyse and organise resource information for use in operational plans in consultation with colleagues and specialist resource managers 2.2. Ensure operational plans contribute to the achievement of the organisation's performance/business plan 2.3. Ensure operational plans identify available ***resources***, taking into account customer needs and the organisation's plans 2.4. Ensure plans maximise value gained from the diversity of the organisation's resources 2.5. Prepare contingency plans in the event that initial plans need to be varied
3. Acquire resources to achieve operational plan	3.1. Recruit and induct employees within the organisation's human resource management policies and practices 3.2. Acquire physical resources and services in accordance with the organisation's practices and procedures
4. Monitor operational performance of drill supervisors and drilling operations	4.1. Monitored systems and processes to establish whether resources are being used as planned 4.2. Investigate problems with resource usage and rectify and/or report to designated persons/groups 4.3. Mentor and coach individuals/teams who have difficulties in using resources to the required standard 4.4. Manage systems, procedures and records associated with documenting resource acquisition and usage in accordance with

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	the organisation's requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to manage multiple drilling operations:

- apply legislative, organisation and site requirements and procedures for managing multiple drilling operations
- legal rights and responsibilities
- all relevant statutory and regulatory requirements which affect multiple sites
- inspection/research techniques for collection of data
- analysis and problem solving techniques
- contractual rights and responsibilities
- planning control systems (sales, advertising and promotion, logistics)
- record keeping systems for multiple sites
- communication systems, processes and procedures
- operate in varied or highly specific contexts
- use competencies independently for routine and non-routine purposes
- use judgement of self and others in planning and using resources, services and processes to achieve outcomes within time constraints
- plan and mange the work of others
- guide teams
- work autonomously, under broad guidance
- negotiation
- computer operations
- research
- implement learning strategies such as:
  - mentoring
  - coaching
  - exchange/rotation
  - action learning
  - structured training programs

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to manage multiple drilling operations:

- legal rights and responsibilities

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- all relevant statutory and regulatory requirements which affect multiple sites
- inspection/research techniques for collection of data
- analysis and problem solving techniques
- contractual rights and responsibilities
- planning control systems (sales, advertising and promotion, logistics)
- record keeping systems for multiple sites
- communication systems, processes and procedures
- goals, objectives, plans, systems and processes
- business and performance plans
- ethical standards
- quality and continuous improvement processes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the management of multiple drilling operations • implementation of requirements, procedures and techniques for the safe, effective and efficient management of multiple drilling operations • working with others to plan, prepare and manage multiple drilling operations • evidence of the consistent successful management of multiple drilling operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the management of multiple drilling operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the management of multiple drilling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Resources may include:	• people • finance • equipment • power/energy • buildings/facilities

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	• technology • information • time • computer software

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGF201A Carry out deck operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of deck operations in the drilling industry. It includes planning and preparing for deck operations, carrying out deck operations, assisting drill crew as directed, operating pneumatic and electric power tools, providing labour for loading and discharging helicopters as directed, providing labour for making up drilling mud, and carrying out post-job operations. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for deck operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity, including safe working practices 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task in compliance with ***statutory requirements*** 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities and ensure ***briefings***/***handover details*** are read/passed on 1.5. Confirm availability and status of necessary permits to work in accordance with operational requirements 1.6. Confirm availability of necessary auxiliary utilities in accordance with operational requirements
2. Carry out deck operations	2.1. Carry out deck operations safely according to operational requirements 2.2. Identify faults and take appropriate ***remedial action*** within functional responsibility 2.3. Deal with ***spillages*** 2.4. Conform to safe working practices
3. Assist drill crew as directed	3.1. Place and tier tubulars in appropriate racks 3.2. Measure and label tubulars and record details as required 3.3. Operate air tugger winches as directed 3.4. Assist with positioning BOP over moonpool 3.5. Assists crane operator in supplying marine riser and running tools to the drill floor
4. Operate pneumatic and electric power tools	4.1. Wear appropriate protective clothing and equipment 4.2. Operate pneumatic and electric power tools in accordance with company and manufacturer's specifications
5. Provide labour for loading and	5.1. Use approved safety approach sectors for

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discharge of helicopters as directed	access to and from the aircraft 5.2. Fuel aircraft under the direction of the aircraft captain and using approved fuelling procedures 5.3. Lift/move baggage and cargo between rig and helicopter using correct lifting techniques
6. Provide labour for making up drilling mud	6.1. Read, interpret and apply mud materials safety data sheet 6.2. Wear correct protective clothing and equipment in accordance with company requirements 6.3. Apply correct lifting techniques for handling of sack material
7. Carry out post-job operations	7.1. Confirm ***equipment*** is clean and ready for re-use according to operational requirements 7.2. Store equipment safely and securely in the designated location according to operational requirements 7.3. Identify faults in the equipment and take appropriate remedial action within functional responsibility

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to carry out deck operations:

- apply legislative, organisation and site requirements and procedures for carrying out deck operations
- carry out duties of a crane chaser/dogger according to company and statutory requirements
- select and fit correct stinger/slings appropriate for crane load
- effect the transfer of personnel by crane
- place, measure, label and record details of tubulars
- operate power tools
- wear appropriate personal protective clothing and equipment during operation of power tools
- assist in running/recovery of bop stack
- operate air tugger winch correctly
- assist in supply of marine riser and equipment to drill floor
- assist in loading/discharge and fuelling of helicopter
- use safety equipment, including fire protection, First Aid and vessel entry equipment
- assist derrickman in making up drilling mud
- identify and report faults
- communicate and report in accordance with company and statutory requirements, using standard communication methods, including:
  - 2-way radio
  - hand signals
  - telephone
  - public address system
  - written work instructions
- read and interpret standard operating procedures, work instructions and data sheets
- apply correct lifting techniques
- fuel aircraft under direction and in accordance with approved fuelling procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to carry out deck operations:

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- deck operations
- company and statutory safety guidelines, procedures and practices
- safe operating procedures
- equipment operations
- reporting procedures
- reasons for identification and care of samples including storage and transport
- occupational health, safety and environment requirements and procedures
- use of materials safety data sheet (MSDS)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for carrying out deck operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of deck operations • working with others to undertake and complete the carrying out of deck operations that meets all of the required outcomes • consistent timely completion of deck operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the carrying out of deck operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • safe working practices • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Statutory requirements may include:	• Petroleum Submerged Lands Act (PSLA) • duty of care • petroleum regulations

Hazards may include:	• working in proximity to drilling rig
	• working in different conditions, including:
	  • sun, rain, wind, storms
	  • hot and cold
	  • calm to severe weather conditions
	  • 24 hour operation

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Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel

Briefings/handover details may include:	• safety briefing/induction
	• pre-tour safety meeting
	• weekly safety meetings
	• Job Safety Analysis (JSA)
	• agreed procedures may include:
	  • company
	  • facility
	  • client
	  • permit to work

Remedial action may include:	• report • rectify • record
Spillages may include:	• hazardous • non-hazardous
Equipment maintenance and preparation may include:	• chipping and painting • cleaning • lubricating • basic maintenance • equipment handling

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGF202A Assist in the transfer of passengers and freight during helicopter operations

Modification History

Not applicable.

Unit Descriptor

This unit covers assisting in the transfer of passengers and freight during helicopter operations in the drilling industry. It includes planning and preparing for the transfer of passengers and freight during helicopter operations, preparing for helicopter loading, loading and unloading helicopters, refuelling, carrying out helicopter 'standby' duties, and preparing for helicopter departure. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the transfer of passengers and freight during helicopter operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities and ensure ***briefings***/***handover details*** are read/passed on 1.5. Confirm availability and status of necessary permits to work in accordance with operational requirements 1.6. Confirm availability of necessary auxiliary equipment in accordance with operational requirements
2. Prepare for helicopter landing	2.1. Conform to safe working practices and operational requirements 2.2. Site ***equipment*** for safe and optimum use in accordance with operational instructions 2.3. Assemble freight and baggage for transportation in accordance with operational instructions
3. Load and unload helicopter	3.1. Make helicopter safe in accordance with operational requirements 3.2. Provide assistance in controlling the transfer of passengers in accordance with operational instructions 3.3. Assemble freight and baggage for transportation
4. Refuelling	4.1. Provide assistance during refuelling 4.2. Identify and report faults 4.3. Store refuelling equipment properly after use
5. Carry out helicopter 'standby' duties	5.1. Obtain and wear appropriate personal protective equipment 5.2. Hold correct position on landing helipad 5.3. Monitor landing and take off

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	5.4. Report faults and take appropriate action within functional responsibility
6. Prepare for helicopter departure	6.1. Store equipment safely and securely in designated location in accordance with operational requirements 6.2. Identify and report faults and take appropriate ***remedial action***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to assist in the transfer of passengers and freight during helicopter operations:

- apply legislative, organisation and site requirements and procedures for assisting in the transfer of passengers and freight during helicopter operations
- understand effects of environmental conditions
- implement cargo handling/weight distribution requirements
- understand air regulations covering carriage of dangerous goods
- understand reasons for clearing away equipment
- apply refuelling procedures for vehicles, drill rigs and ancillary equipment
- apply workplace communication procedures, using:
  - 2-way radio
  - hand signals
  - telephone
  - public address system
  - written work instructions
- apply good housekeeping principals

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to assist in the transfer of passengers and freight during helicopter operations:

- occupational health, safety and environment requirements and procedures
- company and statutory guidelines, procedures and practices
- safe lifting and handling techniques
- safe handling of passengers
- safe boarding methods
- hazards associated with approaching the aircraft
- cargo handling/weight distribution requirements
- rig maintenance
- normal drilling operations
- non-routine drilling operations
- man management/rig management
- offshore technology

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for assisting in the transfer of passengers and freight during helicopter operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of assisting in the transfer of passengers and freight during helicopter operations • working with others to undertake and complete the transfer of passengers and freight during helicopter operations that meets all of the required outcomes • consistent timely completion of passenger and freight transfer assistance during helicopter operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete assisting with the transfer of passengers and freight during helicopter operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • petroleum regulations • Petroleum Submerged Lands Act (PSLA) • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • safe working practices

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks
	• specifications
	• quality of finished works
	• achieved targets
	• operational conditions
	• obtaining of required permits
	• site layout
	• out of bounds areas
	• worksite inspection requirements
	• lighting conditions
	• plant of equipment defects
	• coordination requirements or issues
	• contamination control requirements
	• environmental control requirements
	• barricade and signage requirements
	• instructions concerning:
	  • passengers
	  • baggage
	  • freight
	  • refuelling
	  • shutdown
	  • rotors turning

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	• helicopter type
Hazards may include:	• working in proximity to drilling rig • sun, rain, wind, storms • hot and cold • calm to severe weather conditions • 24 hour operation
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel

Briefings/handover details may include:	• safety briefing/induction
	• pre-tour safety meeting
	• weekly safety meetings
	• Job Safety Analysis (JSA)
	• agreed procedures may include:
	  • company
	  • facility
	  • client
	  • permit to work

Equipment may include:	• fire and safety equipment • chocks • hand tools • nets • power supply
Remedial action may include:	• report • record • rectify • repair • adjust • replace

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIOGF203A Contribute to the control of offshore emergencies

Modification History

Not applicable.

Unit Descriptor

This unit covers contributing to the control of offshore emergencies in the drilling industry. It includes planning and preparing for offshore emergencies, participating in gas and collision drills, participating in rig abandonment drills, participating in 'man overboard' drills, and carrying out helicopter emergency duties. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for offshore emergencies	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task, including knowledge of ***relevant actions*** undertaken to control and alleviate critical situations 1.3. Identify, manage and ***report*** all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities and ensure ***briefings***/***handover details*** are read/passed on
2. Participate in gas and collision drills	2.1. Identify, interpret and apply gas alert ***alarms*** 2.2. Close watertight and gaslight openings in correct sequence 2.3. Read, interpret and apply emergency ventilation shutdown procedure 2.4. Assist with flood control procedures, as directed 2.5. Identify assigned boat station and follow procedure
3. Participate in rig abandonment drills	3.1. Receive, interpret and apply orders for rig abandonment 3.2. Identify correct assigned boat station 3.3. Read, interpret and apply correct survival capsule boarding procedure 3.4. Launch inflatable life raft in accordance with manufacturer's and/or company procedure 3.5. Obtain and wear survival suit/life jacket 3.6. Start survival capsule in accordance with manufacturer's and/or company procedures, as directed 3.7. Lower and release survival capsule 3.8. Operate survival capsule spray protection and air pressurisation system as directed 3.9. Read, interpret and apply First Aid and

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	medivac procedures
4. Participate in "man overboard" drills	4.1. Launch lifebuoy and marker in accordance with manufacturer's and/or company procedures 4.2. Identify, locate and raise correct alarms 4.3. Maintain watch on man in water until rescue is effected 4.4. Direct crane basket recovery, where appropriate
5. Carry out helicopter emergency duties	5.1. Obtain and wear fire resistant clothing (fearnought suit) 5.2. Operate flight deck fire monitors in water and foam modes 5.3. Operate available rescue equipment in accordance with manufacturers and/or company procedures 5.4. Give evacuation assistance from crash site to injured personnel

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to contribute to the control of offshore emergencies:

- apply legislative, organisation and site requirements and procedures for contributing to the control of offshore emergencies
- implement personal protection requirements appropriate to the environment
- recognise effects of changes of ambient conditions on operations
- locate sources of information and interpret drawings and manuals
- operate equipment
- apply good housekeeping principals
- apply workplace communication procedures, using:
  - 2-way radio
  - hand signals
  - telephone
  - public address system
  - written work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to contribute to the control of offshore emergencies:

- occupational health, safety and environment requirements and procedures
- company and statutory guidelines, procedures and practices
- emergency procedures
- fire and gas control system
- emergency shutdown control system
- effects of loss of any utility and its reinstatement
- functioning of process control, including instrumentation
- equipment layout and its connection with other systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for contributing to the control of offshore emergencies • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of contributing to offshore emergency control • working with others to undertake and complete the control of offshore emergencies that meets all of the required outcomes • consistent timely completion of contributing to the control of offshore emergencies that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the control of offshore emergencies

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • Petroleum Submerged Lands Act (PSLA) • petroleum regulations • duty of care

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks
	• specifications
	• quality of finished works
	• achieved targets
	• operational conditions
	• obtaining of required permits
	• site layout
	• out of bounds areas
	• worksite inspection requirements
	• lighting conditions
	• plant of equipment defects
	• coordination requirements or issues
	• contamination control requirements
	• environmental control requirements
	• barricade and signage requirements
	• work practices covering:
	  • individual operation
	  • team operation
	  • use of personal protective equipment
	  • consideration of toxic substances
	  • continuous communication maintained
	  • reacting to on-site emergencies

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Relevant actions may include:	• make safe • isolate • shutdown • evacuate work area • report • record • contain • rectify
Report may include:	• oral • written

Hazards may include:	• working in proximity to drilling rig
	• working in different weather conditions, including:
	  • sun, rain, wind, storms
	  • hot and cold
	  • calm to severe weather conditions
	  • 24 hour operation
	• critical situations including:
	  • operational difficulties
	  • equipment failure
	  • leaks
	  • fires
	  • kicks

Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel

Briefings/handover details may include:	• safety briefing/induction
	• pre-tour safety meeting
	• weekly safety meetings
	• job safety analysis (JSA)
	• agreed procedures may include:
	  • company
	  • facility
	  • client
	• toolbox
	• permit to work

Alarms may include:	• audible • warning gestures • oral warnings

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	• fixed system specific to installation

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGF301A Monitor, operate and maintain mud pits and equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the monitoring, operation and maintenance of mud pits and equipment in the drilling industry. It includes planning and preparing for operations, monitoring operation of mud pumps, and maintaining and repairing mud pumps. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential *hazards* 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Confirm availability of necessary third party utilities in accordance with operational requirements 1.6. Conform to safe working practices and current legislative and operational requirements
2. Monitor operation of mud pump	2.1. Visually inspect and listen to mud pumps for abnormal sounds and leaks 2.2. Check lubricating system and identify and report faults 2.3. Check pressure relief valve (PRV) setting 2.4. Check flow path 2.5. Charge ***discharge*** dampener with nitrogen, to correct pressure, as required 2.6. Charge suction dampener to correct pressure
3. Maintain and repair mud pumps	3.1. Check all clamps when pump is turned off 3.2. Lubricate gear end of pump and check oil levels in gear end of pump 3.3. Replace defective ***consumables*** 3.4. Check liners and swabs for size 3.5. Identify faults or potential faults and report immediately

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to monitor, operate and maintain mud pits and equipment:

- apply legislative, organisation and site requirements and procedures for monitoring, operating and maintaining mud pits and equipment
- recognise and report equipment malfunction or failure
- supervise and train subordinates to provided standards
- work as directed by driller timely and efficiently
- check pumps visually and audibly
- check lubrication system
- set pressure relief valve
- check pressure of suction and discharge dampeners
- charge discharge damper with nitrogen
- check clamp
- lubricate and check oil levels in gear end of pump
- replace swabs, liners, valves, seats and wear plates of fluid end of pump
- prepare replacement parts for fluid end
- ensure correct liners and swabs are in use
- align correctly mud pump discharge valves
- use of mechanical lifting equipment
- read job instructions and manufacturers instruction

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to monitor, operate and maintain mud pits and equipment:

- mud pumps
- company and safety guidelines, procedures and practices
- specified maintenance procedures
- emergency signals and procedures
- safe operating procedures when operating equipment
- rig maintenance
- normal drilling operations
- non-routine drilling operations
- man management/rig management

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- offshore technology

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for monitoring, operating and maintaining mud pits and equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of monitoring, operating and maintaining mud pits and equipment • working with others to undertake and complete monitoring, operating and maintaining mud pits and equipment that meets all of the required outcomes • consistent timely completion of monitoring, operating and maintaining mud pits and equipment that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the monitoring, operating and maintaining of mud pits and equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures including:
	  • Petroleum Submerged Lands Act (PSLA)
	  • petroleum regulations
	  • duty of care
	• manufacturer's guidelines and specifications
	• Australian standards
	• code of practice
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation
	• relevant permits

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• safety briefing/induction
	• pre-tour safety meeting
	• weekly safety meetings
	• Job Safety Analysis (JSA)
	• toolbox
	• permit to work
	• communication through a variety of channels including:
	  • 2-way radio
	  • hand signals
	  • telephone
	  • public address system
	  • written work instructions
	• use of safety equipment including
	  • fire protection
	  • First Aid
	  • survival
	• recording requirements including:
	  • service and maintenance
	  • replacement parts
	  • pump operating logs

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	• use of personal protective equipment including:
	  • eye protection
	  • hearing protection
	  • gloves
	  • footwear
	  • hard hats
	  • respirators
	• consideration of toxic substances
	• maintaining continuous communication
	• reacting to on-site emergencies

Hazards may include:	• working in proximity to drilling rig
	• working in a variety of conditions including:
	  • sun, rain, wind, storms
	  • hot and cold
	  • calm to severe weather conditions
	  • 24 hour operation
	• materials including:
	  • flammable
	  • toxic
	  • corrosive
	  • explosive
	  • radioactive

Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Discharges may include:	• liquids • gases • solids
Consumables may include:	• fluid • liner • valves • seats • wear plates

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Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGF302A Operate drilling fluids and mud pits

Modification History

Not applicable.

Unit Descriptor

This unit covers the operating of drilling fluids and mud pits in the drilling industry. It includes planning and preparing for operations; operating mud pits; operate, maintaining and repairing mud conditioning equipment; and monitoring mud.

Application of the Unit

This unit is appropriate for those working in offshore derrickman roles or as 'mud specialists' working on larger, more complex operations, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Confirm availability and status of necessary permits to work in accordance requirements 1.6. Confirm availability of necessary third party utilities in accordance requirements
2. Operate mud pits	2.1. Give safety the highest priority during the operation and entry of mud pits 2.2. Align valves in pits to ensure correct pit usage as directed 2.3. Double check plugs for operation 2.4. Seal or secure tanks to prevent accidental entry 2.5. Set high and low ***alarms*** where applicable 2.6. Operate mud pit room ventilation system as required 2.7. Operate hoppers in accordance with procedures 2.8. Operate dust extraction system during mixing, if applicable 2.9. Check safety showers and eye washes are accessible and operational 2.10. Supervise forklifts operations 2.11. Store chemicals in appropriate storage area 2.12. Read, interpret and place materials safety data sheet (MSDS) in an accessible place
3. Operate, maintain and repair mud conditioning equipment	3.1. Engage and/or adjust appropriate ***equipment*** as directed by supervisors or mud engineer 3.2. Clean all equipment and visually inspect

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	for leaks, proper operation, in accordance specifications 3.3. Identify faults or potential faults and report immediately 3.4. Perform periodic or scheduled preventative maintenance on all mud treatment units in accordance with specifications
4. Monitor mud	4.1. Monitor and ***record*** mud properties and parameters 4.2. Set alarms to monitor mud 4.3. Check viscosity and weight of mud conform to specifications as directed by mud engineer 4.4. Maintain appropriate volumes and types of drilling fluids as required by well program or company 4.5. Use appropriate mixing procedures to obtain desired properties 4.6. Apply proper safety procedures and equipment for mixing and handling of chemicals 4.7. ***Recognise warning signs of a kick*** and report immediately

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to operate drilling fluids and mud pits:

- apply legislative, organisation and site requirements and procedures
- recognise and report equipment malfunction or failure
- supervise and train subordinates to provided standards
- work as directed by driller and assistant driller
- operate equipment in accordance with good oilfield practice and company policy
- align valves in pits for operability and safety
- operate and service mud treatment equipment
- perform periodic or scheduled preventative maintenance on mud condition equipment
- replace screens and cones on shakers and desilters/desanders
- operate and service transfer valve
- weigh mud and perform viscosity checks
- maintain volumes and types of drilling fluids as required
- use correct mixing procedures to ensure required properties in drilling fluid
- use correct safety procedures and equipment for mixing and handling chemicals in accordance with manufacturer's data sheet
- regularly monitor pit levels, mud properties and cuttings size
- perform numerical calculations including:
  - mud viscosity
  - mud weight
  - volume
  - uphole velocity
  - quantities
  - pressure
  - water loss

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to operate drilling fluids and mud pits:

- legislative and organisations safety guidelines, procedures and practices drilling operation procedures

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- safe operating procedures when operating equipment
- functions of the mud pits
- warning signs of kicks
- troubleshooting techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating of drilling fluids and mud pits • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the operation of drilling fluids and mud pits • working with others to undertake the operation of drilling fluids and mud pits that meets all of the required outcomes • consistent timely operating of drilling fluids and mud pits that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit maybe assessed in a holistic way with other units of competency. The assessment strategy for the assessment of this unit must include more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operating of drilling fluids and mud pits

Guidance information for assessment	Consult the SkillsDMC Implementation Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may be from briefings or handover details that may include:	• safety briefing/induction • pre-tour safety meeting • weekly safety meetings • Job Safety Analysis (JSA) • agreed procedures may include: • company • facility • client • toolbox • permit to work

Work instructions may include:	• individual operation
	• team operation
	• use of personal protective equipment
	• consideration of toxic substances
	• continuous communication maintained
	• reacting to on-site emergencies
	• safety equipment, including:
	  • fire protection
	  • First Aid
	  • survival
	• personal protective equipment, which may include
	  • eye protection
	  • hearing protection
	  • gloves

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	• footwear • hard hats • respirators • aprons • rubber boots • full face visors • rubber gloves
Hazards may include:	• blow out gas to surface • ignition of gas • toxic gases • pressurised coal seam gas system
Coordination requirements may include:	• drill team • operators of other equipment • maintenance personnel • supervisors • worksite personnel
Alarm systems may include:	• gas • fire • high and low alarm • mud density alarm • low/high pressure
Equipment may include:	• shaker • degasser • desilter • desander • mud cleaner • agitators
Recording requirements can include:	• shaker screens • mud properties • volume of liquid mud • size of cuttings • pit level • service and maintenance • replacement parts • chemical stocks
Recognised warning signs of a kick are:	• pit level change • mud property change • volume of mud change • size of cuttings change • pump pressure

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Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGN201A Carry out rig lease operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of rig lease operations in the drilling industry. It includes planning and preparing for rig lease operations, operating pneumatic and electric power tools, assisting drill crew in running and recovery of BOP stack, providing labour for loading and unloading transport, and providing labour for making up drilling mud. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for rig lease operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Place and tier tubulars in appropriate racks 1.6. Measure, label and record tubulars as required 1.7. Operate front end loader in accordance with manufacturer's specifications
2. Operate pneumatic and electric power tools	2.1. Wear appropriate protective clothing and equipment 2.2. Use tools in accordance with manufacturer's instructions
3. Assist drill crew in running and recovery of BOP stack	3.1. Assist operator of air tugger winches as directed 3.2. Assist in positioning BOP 3.3. Assist crew by supplying tools to the drill floor as required
4. Provide labour for loading and unloading transport	4.1. Use approved safety approach 4.2. Use correct lifting techniques and use forklift in a safe manner
5. Provide labour for making up drilling mud	5.1. Comprehend materials safety data sheet 5.2. Use protective clothing and equipment in accordance with data sheet recommendations 5.3. Lift sack material correctly 5.4. Use safety equipment correctly in event of personal contact with hazardous materials

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to carry out rig lease operations:

- apply legislative, organisation and site requirements and procedures for carrying out rig lease operations
- report regularly to and work as directed by the driller/derrickman timely and efficiently
- select and fit correct stinger/slings appropriate for loads
- transfer equipment by forklift
- place, measure, label and record details of tubulars
- operate power and pneumatic tools, wearing appropriate protective clothing
- assist in running/recovery of BOP stack
- operate air tugger winch
- assist in supply of transport equipment to drill floor and loading/unloading
- assist derrickman in making up drilling mud
- read:
  - work schedules
  - manufacturer's instructions
  - materials safety data sheet

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to carry out rig lease operations:

- occupational health and safety obligations
- company and statutory guidelines, procedures and practices
- drill floor operations
- safe operational practices
- numerical tasks involving measurement, e.g. tapes, rulers, calibration devices
- normal drilling operations
- non-routine drilling operations
- man management/rig management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for carrying out rig lease operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of rig lease operations • working with others to undertake and complete rig lease operations that meets all of the required outcomes • consistent timely completion of rig lease operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete rig lease operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures including:
	  • Occupational Health and Safety Acts and regulations
	  • petroleum regulations
	  • environmental regulations
	  • safe working procedures
	  • use of protective clothing
	• manufacturer's guidelines and specifications
	• Australian standards
	• code of practice
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• location of potential hazards
	• pre-tour safety meeting
	• task specific - Job Safety Analysis (JSA)
	• environmental requirements
	• communication through a range of channels including:
	  • 2-way radio
	  • hand signals
	  • verbal
	  • written

Hazards may include:	• working in proximity to drilling rig
	• working in a variety of conditions including:
	  • wet/dry
	  • hot/cold
	  • storms - dust storms, lightning
	  • day/night

Coordination requirements may include:	• other equipment operators • maintenance personnel

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	• supervisors • site personnel

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGN302A Operate mud pumps

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of mud pumps in the drilling industry. It includes planning and preparing for operation, monitoring mud pumps, and maintaining and repairing mud pumps. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Conform to safe working practices and current legislative and operational requirements 1.5. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.6. Confirm availability of necessary third party utilities in accordance with operational requirements
2. Monitor mud pumps	2.1. Visually inspect and listen to mud pumps for abnormal sounds or noise 2.2. Check piston lubricating system 2.3. Check pop-off valve setting 2.4. Check pressure of suction and discharge dampeners 2.5. Charge discharge dampener with nitrogen, as required
3. Maintain and repair mud pumps	3.1. Check pony rod clamp when pump is turned off 3.2. Lubricate gear end of pump and check oil levels in gear end of pump 3.3. Identify faults or potential faults and report immediately 3.4. Identify, ***record*** and/or report requirement for repair or maintenance of mud pumps 3.5. Replace defective swabs, liner, valves, seats and wear plates of the fluid end of pump 3.6. Ready replacement parts for fluid end of pump 3.7. Check liners and swabs for correctness

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate mud pumps:

- apply legislative, organisation and site requirements and procedures for operation of mud pumps
- recognise and report equipment malfunction or failure
- supervise and train subordinates to provided standards
- work as directed by driller timely and efficiently
- check pumps visually and aurally
- check piston lubrication system
- set pop-off valve
- check pressure of suction and discharge dampeners
- charge discharge damper with nitrogen
- check pony rod clamp
- lubricate and check oil levels in gear end of pump
- replace swabs, liners, valves, seats and wear plates of fluid end of pump
- prepare replacement parts for fluid end
- ensure correct liners and swabs are in use
- align correctly mud pump discharge valves
- read:
  - job instructions
  - manufacturer's instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate mud pumps:

- mud pumps
- company and statutory safety guidelines, procedures and practices
- emergency signals and procedures
- safe operating procedures when operating equipment
- rig maintenance
- normal drilling operations
- non-routine drilling operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operation of mud pumps • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of mud pumps • working with others to undertake and complete the operation of mud pumps that meets all of the required outcomes • consistent timely operation of mud pumps that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of mud pumps

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures including:
	  • occupational health and safety
	  • duty of care
	  • environmental
	  • petroleum regulations
	• manufacturer's guidelines and specifications
	• Australian standards
	• code of practice
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation
	• permits

Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• review of operational requirements
	• maintenance and inspection of pumping equipment
	• maintain fluid system to pumps
	• review PTW requirements
	• pre-tour safety meeting
	• review of relative Job Safety Analysis (JSA)
	• communication through a range of channels including:
	  • 2-way radio
	  • intercom
	  • telephone
	  • written instruction
	  • oral instruction
	  • hand signals

Hazards may include:	• working in proximity to drilling rig
	• working in a variety of conditions including:
	  • day/night
	  • storms and lightning
	  • hot/cold

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	• wet/dry (dusty)
Coordination requirements may include:	• other equipment operators • maintenance personnel • supervisors • site personnel
Record may include:	• service and maintenance • replacement and parts • pump operating logs

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOGN303A Operate mud systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the operating of mud systems in the drilling industry. It includes planning and preparing for operations; operating mud system; operating, maintaining and repairing mud conditioning equipment; operating and servicing transfer (butterfly) valves in mud pits; and recognising warning signs of kicks.

Application of the Unit

This unit is appropriate for those working in offshore derrickman roles or as 'mud specialists' working on larger, more complex operations, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Confirm availability and status of necessary permits to work in accordance with requirements 1.6. Confirm availability of necessary third party utilities in accordance with requirements
2. Operate mud system	2.1. Ensure compliance with good oilfield practice and company policy when operating equipment 2.2. Align valves in pits to ensure correct pit usage as directed
3. Operate, maintain and repair mud conditioning equipment	3.1. Engage and/or adjust appropriate ***equipment*** as directed by supervisors or mud engineer 3.2. Clean all equipment and visually inspect for leaks and proper operation, in accordance with specifications 3.3. Identify faults or potential faults and reported immediately 3.4. Identify, ***record*** and report requirement for repair or maintenance of mud conditioning equipment 3.5. Replace screens or cones as necessary, on shakers, desilters, desanders in accordance with specifications 3.6. Perform periodic or scheduled preventative maintenance on all mud treatment units in accordance with specifications
4. Operate and service transfer (butterfly) valves in mud pits	4.1. Align valves as appropriate 4.2. Lubricate valve stems of butterfly valves as appropriate

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	4.3. Clean and inspect transfer valves when pits are empty 4.4. Replace or repair defective parts as necessary
5. Recognise warning signs of kicks	5.1. Monitor, adjust and report pit level 5.2. Monitor and report mud properties 5.3. Monitor and report size of cuttings 5.4. Monitor and report volume of mud returns

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to operate mud systems:

- apply legislative, organisation and site requirements and procedures
- recognise and report equipment malfunction or failure
- supervise and train subordinates to provided standards
- work as directed by driller timely and efficiently
- operate equipment in accordance with good oilfield practice and company policy
- align valves in pits to ensure correct pit usage
- operate mud condition equipment, including shakers, degasser, desilter, desander, mud cleaner and agitators
- perform periodic or scheduled preventative maintenance on mud condition equipment
- replace screens and cones on shakers and desilters/desanders
- operate and service transfer valve
- weight mud for viscosity check
- maintain volumes and types of drilling fluids as required
- use correct mixing procedures to ensure required properties in drilling fluid
- use correct safety procedures and equipment for mixing and handling chemicals in accordance with manufacturer's data sheet
- regularly monitor pit levels, mud properties and cuttings size
- numerical calculations including:
  - viscosity
  - mud weight
  - volume
  - up hole velocity
  - quantities
  - pressure

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to operate mud systems:

- drilling operation
- functions of the mud pits
- warning signs of kicks and indicators
- company and statutory safety guidelines, procedures and practices

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- safe operating procedures when operating equipment
- AOA policy procedure and practices
- rig maintenance
- normal drilling operations
- non-routine drilling operations
- man management/rig management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating of mud systems • implementation of requirements, procedures and techniques for the safe, effective and efficient operating of mud systems • working with others to undertake the operating of mud systems that meets all of the required outcomes • consistent timely operating of mud systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operating of mud systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may be in briefings, handover, pre-tour safety meeting and may include:	• review of operational requirements • pumping equipment maintenance and inspection requirements • fluid system to pumps maintenance requirements • PTW review requirements • review of relative Job Safety Analysis (JSA) • solids control equipment maintenance and operation requirements
Hazards may include:	• blow out gas to surface • ignition of gas • toxic gases • pressurised coal seam gas system
Coordination requirements may include:	• drill team • operators of other equipment • maintenance personnel • supervisors • worksite personnel
Equipment may include:	• shaker • degasser • desilter • desander • mud cleaner • agitators
Recording requirements may	• mud test recording

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include:	• pit level • service and maintenance • replacement parts

Unit Sector(s)

Drilling (Oil and Gas)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS201A Work safely and follow OHS policies and procedures

Modification History

Not applicable.

Unit Descriptor

This unit covers working safely and follow OHS policies and procedures in resources and infrastructure industries. It includes accessing and apply site safety procedures; applying personal safety measures and operational safety measures; maintaining personal wellbeing for job; and identifying and reporting incidents.

Application of the Unit

This unit is appropriate for those working in all roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Access and apply site safety procedures	1.1. Access, interpret and apply ***compliance documentation*** relevant to working safely and follow OHS policies and procedures 1.2. Carry out isolation of energy sources and immobilisation of potential energy sources, including tagging according to required procedure 1.3. Locate destinations within the site by interpreting and applying site plans, transport rules and signage 1.4. Identify and act on or report breaches in site safety in accordance with required procedures
2. Apply personal safety measures	2.1. Use ***personal protective equipment*** in accordance with required procedures 2.2. Establish and maintain a clean and tidy safe working area in accordance with required procedures 2.3. Obtain ***permits*** and clearances in accordance with required procedures, before specialised work is carried out 2.4. Apply safe ***manual handling procedures*** in accordance with guidance and/or procedures 2.5. Identify and apply site procedures for conduct of high-risk activities
3. Apply operational safety measures	3.1. Recognise and respond to alarms in accordance with required procedures 3.2. Identify and clarify own responsibility in regard to emergency situation procedures and respond to and report ***emergency situations*** in accordance required procedures 3.3. Apply basic fire fighting techniques in accordance with requirements 3.4. Identify ***emergency escape route***(***s***) and procedures in accordance with requirements
4. Maintain personal wellbeing for job	4.1. Identify ***risks to personal wellbeing*** and recognise preventative strategies to minimise impact on site 4.2. Identify, act on and report situations which

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	may endanger the individual or others 4.3. Access and explain site requirements for ***fitness for duty*** 4.4. Adhere to site policies in relation to smoking, alcohol and drug use
5. Identify and report incidents	5.1. Understand site incident and injury statistics in accordance with required procedures 5.2. Report and record incidents and injuries in accordance with required procedures 5.3. Contribute to and participate in incident investigations in accordance with the responsibilities and protection under the relevant legislation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to work safely and follow OHS policies and procedures:

- apply legislative, organisation and site requirements and procedures for working safely
- source, interpret and apply safety information
- use and care of personal protective equipment
- apply safe lifting and handling techniques
- implement workplace reporting procedures
- communicate clearly and directly, listening carefully to instructions and information, responding to and clarifying directions
- apply teamwork to a range of situations, particularly in a safety context
- solve problems, particularly in teams and in dealing practically with safety issues such as recognising and responding to alarms
- show initiative in adapting to changing work conditions or contexts particularly when working across a variety of work areas and in choosing appropriate personal protective equipment for each context
- manage time, particularly in organising priorities and planning work
- take responsibility for self organisation of work priorities to follow site safe work procedures
- apply a range of mediums to learn
- apply and use appropriate technology in a safety context

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to work safely and follow OHS policies and procedures:

- equipment safety requirements
- personal protective equipment
- hazardous substances procedures and handling techniques
- materials safety data sheets (MSDS) information and its application
- isolation procedures
- lifting techniques, including for both manual and automated lifting
- OHS procedures
- primary and secondary ventilation
- site safety requirements and procedures

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- participative procedures for workplace management of others (e.g. consultation, safety representatives, committees, dispute resolution)
- potential biological effects (e.g. circadian rhythms, sleep, alertness, fatigue, stress, effects of heat stress and hypothermia)
- drug and alcohol policy
- use of emergency equipment
- basic fire fighting techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for working safely and follow OHS policies and procedures • implementation of requirements, procedures and techniques for working safely and follow OHS policies and procedures • working with others to work safely and follow OHS policies and procedures • consistent timely completion of work that is safe and follows OHS policies and procedures
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical

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	resources normally used in the work environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete work safely and follows OHS policies and procedures

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant **compliance documentation** may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • management plans • safe working procedures (or equivalent) • tagging and lockout procedures • toxic substances procedures • gas monitoring procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Personal protective equipment may include:	• hard hats • hearing protection • eye protection • safety boots • respiratory masks • other prescribed clothing and equipment related to tasks • self rescuers which may include filter or self contained types
Permits and clearances may include:	• access to areas • welding and cutting • power line clearances • start-up procedures • blasting/shotfiring • working at height • confined spaces • vertical openings • dig and penetration
Manual handling may include:	• the use of mechanical handling aids which are present at the workplace place and included in the national standard for Manual Handling and

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	national code of practice for Manual Handling (NOHSC) • team lifting
Emergency situations may include:	• emergency evacuation • fire • incident or injury • electrical shock • falls • entrapment • inrush • fumes • explosions • cyclones • other extreme weather • working in remote locations
Emergency escape route(**s**) are:	• those identified at the workplace and may include the primary and secondary escape route(s)
Risks to personal wellbeing may include:	• non adherence to safety procedures and policies • stress • communicable diseases • adverse personal hygiene • horseplay
Fitness for duty may include:	• smoking restrictions • alcohol impairment • improper use of drugs • fatigue management • physiological and psychological stress • medication • illness

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIOHS202A Enter and work in confined spaces

Modification History

Not applicable.

Unit Descriptor

This unit covers the entering and working in confined spaces in resources and infrastructure industries. It includes planning and preparing for entry of confined spaces, entry and working in confined spaces, exiting confined spaces and cleaning up.

Application of the Unit

This unit is appropriate for those working in confined spaces (enclosed or partially enclosed) for the purpose of carrying out work or inspections and also is appropriate for those performing sentry or stand-by person roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining
- General construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for entering and working in confined spaces	1.1. Access, interpret and apply ***compliance documentation*** relevant to entering and working in confined spaces 1.2. Obtain, confirm and apply ***work instructions*** relevant to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** relevant to the allotted task 1.4. Obtained authorisation (***entry permit***) to enter the ***confined space*** is in accordance with regulatory requirements 1.5. Confirm the emergency response procedure is with the stand-by person 1.6. Identify, obtain and implement ***signage*** and barrier requirements as required by the project plan 1.7. Select tools and equipment to carry out tasks that are consistent with the requirements of the job and check them for serviceability and rectify or report any faults 1.8. Identify, confirm and apply to the allotted task the ***environmental protection requirements*** from the project environmental management plan 1.9. Position rescue equipment as required by the entry permit close to the point of entry
2. Enter and work in the confined space	2.1. ***Gain access*** to the confined space 2.2. Ensure that the atmosphere is tested and monitored for harmful elements in accordance with procedures 2.3. Apply tagging and lock-out procedures as required 2.4. Enter the confined space according to agreed procedure 2.5. Maintain ***communication*** with the stand-by person 2.6. Comply with entry permit requirements while carrying out designated work in confined space 2.7. Monitor and adhere to allocated entry time

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3. Exit confined space	3.1. Exit confined space according to agreed procedure 3.2. Recover tools, equipment and materials from the confined space 3.3. Conduct inspection of the confined space 3.4. ***Secure access*** according to site procedures 3.5. Remove tagging and lock-out according to site procedures 3.6. Complete confined space entry permit
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.2. Clean, check, maintain and store ***tools and equipment*** in accordance recommendations and standard work practices 4.3. Remove, clean and store barriers and signs

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to enter and work in confined spaces:

- apply legislative, organisation and site requirements and procedures
- apply operational, maintenance and basic diagnostic procedures
- apply materials handling methods
- use atmospheric monitoring devices
- interpret JSAs/Safe work method statements

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to enter and work in confined spaces:

- site and equipment safety requirements
- confined space entry and exit procedures, risks and regulations
- air contaminants and toxic gases
- breathing apparatus limitations
- equipment types, characteristics, technical capabilities and limitations
- site isolation and site control responsibilities and authorities
- materials safety data sheets (MSDS)
- project quality requirements
- industry terminology
- state and territory interpretations of a confined space

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for entering and working in confined spaces • implementation of requirements, procedures and techniques for the safe, effective and efficient completion for entering and working in confined spaces • working with others to undertake and complete the entering and working in confined spaces that meet all of the required outcomes • consistent timely completion of entering and working in confined spaces that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the entering and working in confined spaces

Guidance information for assessment	• Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may include:	• plans • specifications • quality requirements • operational details

Safety requirements may be included in:	• site safety plans
	• organisational policies and procedures
	• statutory/regulatory authorities which may include:
	  • federal
	  • state and
	  • local authorities
	• verbal or written and graphical instructions
	• signage
	• work schedules/plans/specifications
	• work bulletins
	• charts and hand drawings
	• memos
	• maps
	• materials safety data sheets (MSDS)
	• diagrams or sketches
	• safe work procedures or equivalent related to working in confined spaces
	• regulatory/legislative requirements pertaining to working in confined spaces
	• manufacturer's specifications and instructions
	• organisation's work specifications and

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	requirements • instructions issued by authorised organisational or external personnel • relevant Australian standards
Safety requirements may include:	• OHS requirements • personal protective clothing and equipment as prescribed under legislation, regulation and workplace policies and practices • use of tools and equipment • workplace environment and safety • handling of materials • use of fire fighting equipment • use of First Aid equipment • hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with working in confined spaces, working in proximity to others, worksite visitors and the public • hazards and risks may include but not be limited to fires, underground services, excavations, traffic, hazardous materials, contaminated atmosphere and toxic gases • risks associated with confined spaces may include but not be limited to restricted means of entry and exit, atmosphere which contains potentially harmful levels of contaminant, unsafe oxygen levels or engulfment • respiratory protection devices are to include but not be limited to air purifying respirators and may include self contained compressed air breathing apparatus, supplied airline breathing apparatus and escape breathing apparatus and atmospheric monitoring devices
Confined space **entry permit**, or work permits, may include:	• location of work • duration of work • size of work crew • atmospheric testing requirements • personal protective equipment • hot work • stand-by personnel • rescue arrangements • other precautions (signs, barriers)

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	• authorisation
Confined spaces may include:	• storage tanks, tank cars, process vessels, boilers, pressure vessels, silos and other tank-like compartments • open-topped spaces such as pits or degreasers • pipes, sewers, shafts, ducts and similar structures • shipboard spaces entered through a small hatchway or access point, cargo tanks, cellular double bottom tanks, duct keels, ballast and oil tanks and void spaces (but not including dry cargo holds)
Signage may include:	• site safety signage • temporary signage for the benefit of motorists • pedestrians and barricades
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Gain access may include:	• removing access cover • installing and securing ladder
Communications may include:	• verbal instructions • fault reporting • 2-way radio • hand signals • mobile phone • site specific instructions • written instructions • instructions related to job/task
Secure access may include:	• replacing or closing off access cover
Tools and equipment may include:	• harness and lifeline • respirator apparatus • atmospheric testing equipment • signs • barricades • communication devices • tools and equipment relevant to the work to be

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	performed

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS203A Maintain amenities

Modification History

Not applicable.

Unit Descriptor

This unit covers the maintenance of amenities in resources and infrastructure industries. It includes planning and preparing for work and providing amenities services.

Application of the Unit

This unit is appropriate for those working in maintenance roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the maintenance of amenities 1.2. Obtain, interpret and clarify or confirm ***work requirements*** before proceeding 1.3. Obtain and prepare ***materials*** and resources required for work
2. Provide amenities services	2.1. Establish and monitor a safe work environment throughout the job 2.2. Administer ***service contracts*** 2.3. Clean and maintain amenities with ***equipment*** provided 2.4. Maintain amenities equipment and ***cleaning accessories*** 2.5. Maintain security 2.6. Dispose of ***hazardous and environmentally sensitive materials*** 2.7. Maintain records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to maintain amenities:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- plan maintenance and servicing schedules
- dispose of environmentally sensitive materials
- communicate and negotiate with contractors or suppliers and worksite employees
- maintain records
- maintain and perform minor repairs on equipment
- use hand tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to maintain amenities:

- site personal and operational safety procedures
- worksite operating procedures
- worksite site chemical substance information system
- amenities equipment characteristics, uses and limitations
- manufacturer and site equipment maintenance systems
- stock control procedures related to the amenities operations
- legislative and enterprise records systems and requirements
- site environmental requirements and constraints

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for maintenance of amenities • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the maintenance of amenities • working with others to undertake and complete the maintenance of amenities that meets all of the required outcomes • consistent timely completion of the maintenance of amenities that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the maintenance of amenities

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders • safe working procedures (or equivalent)

Work requirement details may include:	• cleaning and maintenance schedules
	• notices of personnel rosters
	• notice of visitors requiring support
	• defect reports on equipment / accessories
	• coordination requirements / issues
	• requirement to repair
	  • baskets
	  • rollers
	  • lockers
	  • doors

Materials may include:	• protective clothing • boots • chemicals • detergents • linen
Service contracts may include:	• laundry contracts • clothing issues
Equipment may include:	• heaters • air controllers • dryers • vacuum cleaners

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	• floor brushes • high pressure cleaners
Cleaning accessories may include:	• heating equipment • showers • taps • toilets • kit baskets or hangers
Hazardous and environmentally sensitive materials may include:	• chemicals • soaps • other cleaning materials

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS204A Work safely at heights

Modification History

Not applicable.

Unit Descriptor

This unit covers working safely at heights in resources and infrastructure industries. It includes: identifying the work requirements, work procedures and instructions for the task; accessing and installing equipment; performing work at heights; and cleaning up the work area.

Application of the Unit

This unit specifies the competency required to undertake safe working practices when working at heights or depths.
This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify work requirements	1.1. Access, interpret and apply ***compliance documentation*** relevant to working safely at heights 1.2. Identify the scope of the task 1.3. Adhere to ***OHS requirements*** associated with working safely at heights, and the workplace environment throughout the work 1.4. Inspect site to determine layout and physical condition, condition of structures, prevailing weather conditions, equipment requirements and potential hazards 1.5. Identify and document scope of the task and proposed work practices/activities 1.6. Identify, select and check safety equipment for serviceability 1.7. Identify, manage and report potential risks and hazards
2. Identify work procedures and instructions for the task	2.1. Select materials, ***tools and equipment***, including personal safety equipment, and check for serviceability 2.2. Inspect/install fall protection and perimeter protection equipment ensuring adequacy for work and conformance to regulatory requirements 2.3. Identify approved methods of moving tools and equipment to work area and minimise potential hazards associated with tools at heights 2.4. Install ***safety system*** in accordance with requirements 2.5. Select and install appropriate signs and barricades
3. Access and install equipment	3.1. Correctly fit, adjust and anchor fall protection and associated equipment 3.2. Make appropriate arrangements to install required equipment 3.3. Use recommended methods to access work area for people, tools and equipment 3.4. Place tools and materials to eliminate or minimise the risk of items being knocked

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	down
4. Perform work at heights	4.1. Check access from ground to work area to ensure it is safe and in accordance with requirements 4.2. Keep fall equipment in place and adjusted appropriately to all for movement during work 4.3. Undertake manual handling of materials and equipment in accordance with requirements 4.4. Locate materials and equipment ensuring that they are safely secured and distributed 4.5. Check safety system periodically for compliance with requirements and procedures 4.6. Monitor risk control measures to ensure that they are effective and appropriate to the task and work environment 4.7. Reassess risk control measures, as required, in accordance with changed work practices and/or site conditions and undertake alterations
5. Clean up work area	5.1. Dismantle safety system in accordance with sequence and remove from worksite 5.2. Clear work area and dispose of or recycle materials 5.3. Clean, check, maintain and store tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to work safely at heights:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical and safety information
- apply diagnostic/faultfinding techniques
- apply environmental requirements
- apply isolation procedures
- work in varying weather conditions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to work safely at heights:

- the names and functions of equipment, components and materials
- equipment manufacturer's instructions and specifications
- safe shifting and handling of tools and materials
- statutory and regulatory authority requirements
- the nature of work undertaken at heights
- heights safety systems
- the processes of providing for safe working practices
- safety equipment/systems and considerations to facilitate working safely at heights
- safe work methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for working safely at heights • implementation of requirements, procedures and techniques for safe, effective and efficient working at heights • working with others to undertake and complete work safely at heights that meets all of the required outcomes • consistent timely completion of work at heights that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete work safely at heights

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
OHS requirements may include those associated with:	• protective clothing and equipment • use of tools and equipment • workplace environment and safety • handling of materials • use of fire fighting equipment • use of First Aid equipment • hazard control • hazardous materials and substances
Hazards may include:	• falling objects • removal of scaffold components • inappropriate carrying of materials on ladders • excessive bending or twisting in different work situations
Tools and equipment may include:	• fall protection • perimeter protection • signage and barricades • ladders • lifting/load shifting equipment including: • hand trolleys • rollers • forklifts • chain blocks • hoists • jacks • scaffolds

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	• elevated work platforms • lifting equipment (such as cranes)
Safety systems may include:	• scaffolds • handrails • foot walks • kickboards • safety harness • harness fixing points

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS205A Control traffic with stop-slow bat

Modification History

Not applicable.

Unit Descriptor

This unit covers controlling of traffic with a stop-slow bat in resources and infrastructure industries. It includes: planning and preparing; coordinating traffic; operating radios; and cleaning up.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to controlling of traffic with a stop-slow bat 1.2. Obtain, confirm and apply ***work instructions*** relevant to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** from the site safety plan and organisational policies and procedures for the allotted task 1.4. Identify, obtain and implement ***signage and devices*** requirements from the project traffic management plan 1.5. Select ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job; check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan
2. Coordinate traffic	2.1. Position or confirm temporary traffic signs and barriers in accordance with regulations 2.2. Direct traffic in accordance with site traffic plan and away from services or areas of potential damage or danger 2.3. Control vehicles and pedestrian traffic within the worksite to ensure safety of workers 2.4. Monitor traffic, and make adjustments for changing ***conditions***, and position waiting vehicles to allow for smooth traffic flow 2.5. Use hand held stop/slow bats in accordance with regulatory authority approved procedures 2.6. Use hand signals in accordance with regulatory authority approved procedures 2.7. Report traffic offenders in accordance with regulatory authority approved procedures
3. Operate radio	3.1. Adjust ***radio*** controls for optimum reception/transmission results 3.2. Transmit messages concisely and in

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	accordance with operating procedures or best practice 3.3. Maintain radio power supply 3.4. Check radio contact after nominated period of non contact
4. Clean up	4.1. Remove or cover signs and devices sequentially to provide warning to motorists during shutdown 4.2. Clean, check, maintain and store tools and equipment in accordance with recommendations and standard work practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to control traffic with a stop-slow bat:

- apply legislative, organisation and site requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to control traffic with a stop-slow bat:

- site and equipment safety requirements
- traffic controlling
- traffic management plans
- traffic control signage and barricades
- radio operations
- equipment types, characteristics, technical capabilities and limitations
- operational and maintenance procedures for equipment
- site isolation and traffic control responsibilities and authorities
- affects of travel speed and vehicle mass on stopping distances
- quality requirements
- JSAs/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for controlling traffic with a stop-slow bat • implementation of requirements, procedures and techniques for the safe, effective and efficient control of traffic with a stop-slow bat • working with others to control traffic with a stop-slow bat that meets all of the required outcomes • consistent timely control of traffic with a stop-slow bat that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace context. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to control traffic with a stop-slow bat

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may be received via verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, materials safety data sheets (MSDS) and diagrams or sketches and may include:	• plans • specifications • quality requirements • operational details • safe work procedures or equivalent • regulatory/legislative requirements • manufacturers' specifications and instructions • organisation work specifications and requirements • instructions issued by authorised organisational or external personnel • relevant Australian Standards

Safety requirements may include:	• those included in compliance documentation
	• personal protective equipment
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • uneven/unstable terrain
	  • trees
	  • pits
	  • poles
	  • trip hazards
	  • dirt mounds
	  • overhead services

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	• underground services
	• bridges
	• surrounding buildings
	• obstructions
	• structures
	• facilities
	• fires
	• excavations
	• traffic
	• embankments
	• cuttings
	• hazardous materials
	• recently filled trenches
	• other machines
	• personnel
	• restricted access barriers
	• traffic control
	• working in proximity to others
	• worksite visitors and the public
	• safe parking practices, including:
	  • ensuring access ways are clear
	  • equipment/machinery is away from overhangs and refuelling sites
	  • safe distance from excavations
	  • secured from unauthorised access or movement

Signage and devices are to include:	• temporary warning signs • regulatory and traffic cones
Signage and devices may include:	• vehicle mounted signs and flashing lights • guide signs • warning signs • barriers • hazard markers • bollards • arrow boards
Tools and equipment are to include:	• radio • stop-slow bat • high visibility vest • traffic cones • signage

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Tools and equipment may include:	• warning lights and beacons • arrow boards
Environmental include the requirements of the organisational/ project environmental management plan, and may include:	• waste management • water quality protection • noise, vibration and dust management • clean-up management
Trafficconditions may include	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Radios may include:	• VHF and UHF

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS301A Conduct safety and health investigations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting safety and health investigations in resources and infrastructure industries. It includes determining the investigation objectives; gathering information; evaluating information; identifying courses of action; and preparing and presenting investigation reports.

Application of the Unit

This unit is appropriate for those working in operational roles or on safety committees, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine the investigation objectives	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting safety and health investigations 1.2. Determine the scope of the ***investigation*** to ensure pre- and post-incident timeframe is considered consistent with legislative requirements and site standard 1.3. Determine the proposed investigation objectives from an ***analysis of the available information*** and factors 1.4. Test the proposed objectives and clarify the scope of the investigation 1.5. Ensure the final objectives and scope of the investigation will be achievable within available resources and authority constraints
2. Gather information	2.1. Maintain ***site security*** and integrity of evidence in accordance with legislative and site requirements 2.2. Plan and prepare for the systematic collection of ***information*** 2.3. Schedule information collection and completion to ensure minimum backtracking or repeat actions 2.4. Ensure methods used to collect and examine information, including ***interviewing*** and ***recording***, meet standards and legislative requirements 2.5. Collect, test and organise all information appropriate to the investigation according to legislative and/or industry standards
3. Evaluate information	3.1. Assess and evaluate information for its validity and reliability and organise as evidence to aid decision making 3.2. Undertake further research where information is unclear or inadequate, and correct the discrepancy/ deficiency 3.3. Analyse the evidence to determine the causes of the incident 3.4. Draw conclusion from the relevant evidence based on reasoned argument and

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	balance of probability or other agreed standard 3.5. Ensure the findings address the factual objectives established for the investigation
4. Identify courses of action	4.1. Frame options for the courses of action to address or respond to the findings of the investigation 4.2. Ensure options are provided in a form which meets the audience, requirements, can be easily understood and enables the selection of the most appropriate course of action 4.3. Ensure the course of action selected will resolve the issues or problems recognised by the investigation and reduce the probability of recurrence 4.4. Ensure the selected course of action can be implemented in accordance with relevant national, state and industry standards
5. Prepare and present investigation reports	5.1. Prepare ***investigation reports*** in accordance with specified standards 5.2. Present reports in a format, which ensures that findings, causes, options and courses of action can be readily understood by audience 5.3. Present the reports, including findings and ***recommendations***, to the required audience 5.4. Review the investigation process and pass ***recommendations*** for process changes and improvements to the appropriate authority

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct safety and health investigations:

- apply legislative, organisation and site requirements and procedures
- locate, interpret and apply relevant legislative and operational information
- identify and/or confirm the linkages between factors and outcomes, causes and effects and direct/indirect causal relationships
- apply technical literacy and communicate sufficiently to interpret and apply common industry terminology, and interpret work procedures and processes
- speak in plain English and communicate orally with supervisors and other employees
- question and listen actively, e.g. when obtaining information of technical working practices
- write effectively to allow report writing
- plan and organise sufficiently to prepare and apply investigative processes
- apply teamwork skills sufficient to involve and engage the employers/supervisors in the investigation processes
- solve problems to assess technical mining issues
- apply presentation skills to deliver report to various levels of industry

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct safety and health investigations:

- legislation and regulations
- topic or subject area which is the target for the investigation
- theory of safety and health investigative research and analysis
- symptoms and possible immediate effects of post traumatic stress in an investigation situation
- appropriate industry context
- site procedures and conventions related to safety and health investigations
- site risk management processes and their applications
- conventions and requirements for written communications, including report writing

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting safety and health investigations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of safety and health investigations • working with others to undertake and complete safety and health investigations that meets all of the required outcomes • consistent timely completion of safety and health investigations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete safety and health investigation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Investigations may involve a range of issues but will generally be related to:	• accidents, incidents or near misses • safety and health systems and issues • safety aspects of technical processes and procedures • safety aspects of equipment specifications and performance definition
Analysis of information may be divided into five main areas including:	• people • environment • equipment • procedures • organisation
Site security may require:	• signage • barricades • actions to treat and/or comfort victims and witnesses • temporary engineering and stability measures • security personnel • other relevant measures This is in order to: • create a safe environment • ensure the integrity of evidence
Information collection may include:	• reconstruction of events • interviews • statements • audio recording

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	• photographs • scale diagrams • accessing other formal information sources
Information sources may include:	• applicable commonwealth/state/territory legislation and codes of practice relating to the industry, dangerous and hazardous goods, environmental protection and OHS • emergency procedures • enterprise quality assurance procedures • manufacturer's/documentation and handbooks • materials safety data sheets • worksite communications, management and inventory systems • worksite safety management systems • worksite's rescue service publications and information • operations manuals or equivalent • personal and work area work procedures and practices • quality work specifications and procedures • workplace operating procedures and policies
Interview techniques and processes may need to be:	• managed to avoid prejudicing individual legal rights • varied to avoid exacerbating post traumatic stress or similar symptoms for witnesses and involved parties
Recording and reporting requirements are:	• in accordance with legislative and worksite policies and procedures
Investigation report formats may be established on a site basis but are likely to include:	• objective(s) • general overview • research and information collection methodology • analytical criteria • findings (including essential and contributing factors) • recommendations • follow-up actions • records of all relevant evidence
Investigation recommendations may include:	• safety management systems • processes and procedures • behaviours/actions • equipment and materials

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	• working environment

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS302A Implement traffic management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the competency required to implement a traffic management plans in the civil construction industry. It includes: planning and preparing; setting out, monitoring and closing down the traffic guidance scheme; and cleaning up.

Application of the Unit

These traffic management plans include those for public and private roads, parking areas and restricted access construction sites. This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to implement a traffic management plans 1.2. Obtain, confirm and apply ***work instructions*** relevant to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** from the site safety plan and organisational policies and procedures to the allotted task 1.4. Identify, obtain and implement ***signage and devices*** requirements from the project traffic management plan 1.5. Select ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan to the allotted task 1.7. Check the designated traffic controllers' training and qualifications for currency as per legislation 1.8. Advise traffic controllers of the traffic flow requirements for the site
2. Set out the traffic guidance scheme	2.1. Select traffic guidance scheme to suit site ***conditions***, traffic volumes and work activities 2.2. Determine and ensure adherence to work schedule, maximum traffic delays, signals and site ***communications*** 2.3. Ensure signs and devices are correctly positioned on the approaches to the work area in accordance with the traffic management plan 2.4. Ensure that signs and devices are positioned and displayed on each approach according to Road Authority requirements and the traffic management plan 2.5. Ensure signs and devices are positioned

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	laterally and displayed in accordance with Road Authority requirements 2.6. Ensure traffic is controlled effectively to protect the work crew placing traffic control devices around the work area
3. Monitor traffic guidance scheme	3.1. Ensure traffic flow is monitored and effectiveness of guidance scheme determined 3.2. Monitor work activities and provide guidance to adjust scheme 3.3. Apply process for dealing with traffic controllers when they fail to adhere to the approved procedures 3.4. Apply procedures to deal with offending motorists
4. Close down traffic guidance scheme	4.1. Ensure traffic is controlled to protect work crew removing traffic control devices from the work area 4.2. Ensure signs are removed in sequence to provide maximum warning during removal of traffic control devices 4.3. Ensure guidance scheme details are recorded to organisational and or Road Authority requirements 4.4. Ensure incidents are reported as required by the organisation and/or Road Authority
5. Clean up	5.1. Ensure work area is cleared in accordance with the project environmental management plan 5.2. Ensure tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement a traffic management plan:

- apply legislative, organisation and site requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement a traffic management plan:

- site and equipment safety requirements
- state and territory traffic management legislation
- requirements set down by the Manual for Uniform Traffic Control Devices
- potential hazards
- traffic controlling
- traffic management plans
- basic signalling
- signs and devices
- radio operations
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of travel speed
- quality requirements
- civil construction terminology
- JSAs/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for implementing of traffic management plans
	• implementation of requirements, procedures and techniques for the safe, effective and efficient implementing of traffic management plans, which are to include:
	  • complying with State/Territory regulations on three separate live traffic projects, and
	  • one project controlling site construction vehicles
	• working with others to undertake and complete the traffic management plans that meet all of the required outcomes
	• consistent timely implementation of traffic management plans that safely, effectively and efficiently meets the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to implement traffic management plans

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may be received via verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, materials safety data sheets (MSDS) and diagrams or sketches and may include:	• specifications • quality requirements • operational details • safe work procedures or equivalent • regulatory/legislative requirements • manufacturers' specifications and instructions • organisation work specifications and requirements • instructions issued by authorised organisational or external personnel • relevant Australian standards

Safety requirements may include:	• those included in compliance documentation
	• personal protective equipment
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • uneven/unstable terrain
	  • trees
	  • pits
	  • poles
	  • trip hazards
	  • dirt mounds
	  • overhead services
	  • underground services

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	• bridges
	• surrounding buildings
	• obstructions
	• structures
	• facilities
	• fires
	• excavations
	• traffic
	• embankments
	• cuttings
	• hazardous materials
	• recently filled trenches
	• other machines
	• personnel
	• restricted access barriers
	• traffic control
	• working in proximity to others
	• worksite visitors and the public
	• safe parking practices, including:
	  • ensuring access ways are clear
	  • equipment/machinery is away from overhangs and refuelling sites
	  • safe distance from excavations
	• secured from unauthorised access or movement
	• emergency procedures

Signage and devices are to include	• temporary warning signs • regulatory and traffic cones
Signage and devices may include:	• vehicle mounted signs and flashing lights • guide signs • warning signs • barriers • hazard markers • portable traffic signals • bollards • arrow boards
Tools and equipment are to include:	• high visibility vests • cones • signage • notebooks

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	• pens • radios • stop-slow bats • delineators • barricades • barriers • bollards • warning lights and beacons • arrow boards • signalling devices
Environmental include the requirements of the organisational/ project environmental management plan, and may include:	• waste management • water quality protection • noise, vibration, dust management • clean-up management
Conditions may include:	• varying terrain • all weather conditions • varying road surfaces • all vehicle types • rural, urban or residential localities • all times of day • varying traffic volumes • varying road types • congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas • civil construction site • road where civil construction work is conducted
Communications is to include:	• verbal instructions • fault reporting
Communications may include:	• 2-way radio • hand signals • mobile phone • site specific instructions • written instructions • instructions related to job/task

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Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS401A Supervise work in confined spaces

Modification History

Not applicable.

Unit Descriptor

This unit covers supervising work in confined space in resources and infrastructure industries. It includes: preparing for work; providing information; ensuring that the safety and health of personnel entering and working in a confined space is not affected; supervising entry and work; implementing emergency and rescue systems; and withdrawing from confined space and facilitate return to service.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work in the confined space	1.1. Access, interpret and apply ***compliance documentation*** relevant to the working in confined spaces 1.2. Access and interpret the site ***confined spaces safety management program*** 1.3. Determine tasks and access or develop Safe Operating Procedures for work to be carried out in the confined space 1.4. Identify and implement ***communications*** system and equipment 1.5. Select ***personal protective equipment*** appropriate for work activities 1.6. Identify and obtain resources for implementation of the confined spaces safety management program 1.7. Prepare Confined Space Entry Permit and hot work permits
2. Provide information about working in confined spaces	2.1. Establish effective consultation mechanisms with all levels of the workforce 2.2. Consult with employees and employee representatives on implementation of the confined spaces safety management program 2.3. Identify and meet the communication needs of special groups 2.4. Provide information, instruction, training and supervision to employees on safe working in confined spaces
3. Ensure that the safety and health of personnel entering and working in a confined space is not affected	3.1. Identify relevant personnel or expertise for risk assessment, and initiate hazard identification and risk assessment process of the confined space and work to be carried out 3.2. Identify and record hazards associated with the confined space and the work to be carried out 3.3. Assess risks relating to work in the confined space 3.4. Identify and implement effective control measures for confined space hazards

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	according to the ***Hierarchy of Controls*** 3.5. Develop a confined space checklist for the Confined Space Entry Permit 3.6. Ensure that atmospheric monitoring instruments are available or installed in the confined space, and calibrated correctly 3.7. Keep written records of hazard and risk assessment processes and outcomes, and the controls put in place
4. Supervise entry and work in a confined space	4.1. Allocate resources to confined space personnel for effective, safe performance of designated work 4.2. Ensure that all personnel entering the confined space read, understand and sign the Confined Space Entry Permit and hot work permits 4.3. Ensure that all personnel are clear on their work activities and responsibilities 4.4. Brief and post confined space observers and sentries 4.5. Check that required personal protective equipment is worn in accordance with site practices and manufacturers' instructions 4.6. Ensure that communications systems are installed and maintained 4.7. Monitor and evaluate the continued effectiveness of risk assessment processes and controls 4.8. Test and maintain controls 4.9. Ensure that work adheres to SOPs
5. Implement confined space emergency and rescue systems	5.1. Select emergency rescue equipment appropriate for the confined space activities 5.2. Identify and liaise with external Emergency Services agencies 5.3. Implement site approved emergency procedures 5.4. Ensure that personnel are trained in emergency procedures 5.5. Keep and maintain emergency procedure training records
6. Withdraw from confined space and facilitate return to service	6.1. Ensure that confined space work is completed to site requirements and all work-related materials and equipment

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	removed from the confined space 6.2. Ensure all Permits to Work are cleared and systems isolation devices removed 6.3. Ensure that all personnel sign off the Confined Space Entry Permit 6.4. Advise appropriate personnel that the confined space is clear for return to service 6.5. Review the confined space safety management program

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise work in confined space:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical and safety information
- apply activity coordination and supervision procedures
- apply effective communication with a range of people in the workplace
- apply plant and equipment record requirements
- apply diagnostic/faultfinding techniques
- apply environmental requirements
- apply procedures for working at heights
- apply task analysis techniques
- apply atmospheric contaminants measurement procedures
- apply First Aid
- apply fire fighting techniques
- apply negotiation procedures with employers and employees

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise work in confined space:

- legislation, standards and code of practice as they apply to confined spaces
- definition of confined space
- responsibilities of employers and employees, designers, manufacturers, suppliers and installers in general as they apply to safe work in confined spaces
- the process of hazard identification, risk assessment and control
- workplace strategies for implementing confined space legislation
- the effects of atmospheric contaminants entering the respiratory system
- effects on the human body such as:
  - oxygen deficiency
  - toxic contaminants
  - combustible contaminants
  - physical hazards such as engulfment and entrapment
  - physiological conditions such as asthma, epilepsy, phobias and physical fitness
- risks to workers handling hazardous substances in confined spaces

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- risks from electric shock, explosion or fire, temperature changes, noise, and trips, slips and falls
- relationship between work environment and systems of work
- injury record systems
- consultation requirements and procedures with employees and employee representative
- control measures and the Hierarchy of Controls
- methods of systems isolation
- Safe Operating Procedures
- examination, testing and maintenance of control measures
- emergency procedures in confined spaces
- selection, use, training and maintenance of safety and rescue equipment
- implementation of emergency rescue procedures
- consultation techniques
- communication and observer systems
- record keeping requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for supervising work in confined spaces • implementation of appropriate procedures and techniques for the supervision of safe, effective and efficient work in confined spaces • working with others to plan, prepare and conduct work in confined spaces • provision of clear and timely instruction and supervision by the individual of those involved in working in confined spaces • evidence of the consistent successful supervision of work in confined spaces
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct work in confined spaces
	  • provision of clear and timely instruction and supervision by the individual of those involved in working in confined spaces

Guidance information for assessment	• Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **confined spaces safety management program** may typically cover:	• roles and responsibilities according the legislation and identification and designation of areas of responsibility • hazard identification and risk management • specific strategies to ensure that training and information are delivered commensurate to the position and responsibility • procedures for safe working in confined spaces • system for use of confined spaces entry and hot work permits • record keeping in accordance with legislative requirements • resourcing of appropriate confined spaces safety training
Communications may include:	• hand-held radio • telephone • mobile phone • hand signals • computer • verbal instructions • lights
Personal protective equipment may include:	• face and eye protection; • head protection; • foot protection; • body protection;

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	• hearing protection; • respiratory protection; • hand protection • harnesses and/or safety lines
The **Hierarchy of Controls** lists the control measures that should be implemented in priority order, including:	• elimination • substitution • isolation • engineering controls • administrative controls • personal protective equipment

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS402A Examine and maintain mine safety

Modification History

Not applicable.

Unit Descriptor

This unit covers examining and maintaining safety in open-cut coal mines. It includes: maintaining familiarity with operational and safety activities; and examining operations.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist role, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Maintain familiarity with operational and safety activities	1.1. Access, ***interpret*** and apply ***compliance documentation*** relevant to examining and maintaining safety in open-cut coal mines 1.2. Obtain, analyse and confirm ***operational information*** in the form of handover reports, work instructions and verbal briefings 1.3. Obtain and clarify operational forecast information related to the work area and confirm with appropriate management authorities 1.4. Access, interpret and apply geological and survey data to complete all allocated tasks in accordance with site procedures 1.5. Obtain, interpret and apply to all work activities, legislative and site requirements. 1.6. Access and apply ***safety information and procedures*** throughout work 1.7. ***Coordinate*** activities with others at site prior to commencement of, and during, the work activity
2. Examine operations	2.1. Conduct ***inspections*** as detailed in legislative requirements and site procedures 2.2. Respond immediately to instances of non compliance to regulatory or other operational practices which endanger personnel 2.3. Discuss inspection findings with responsible parties and initiate a response to restore operational safety and site compliance 2.4. Record results of inspections and process records in accordance with legislative requirements and site procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to examine and maintain mine safety:

- apply legislative, organisation and site requirements and procedures
- read, explain and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
  - job priorities
- apply geological and survey information
- apply procedures to recognise potential hazards and apply corrective measures according to site/legislative procedures
- apply feedback procedures
- apply technical reporting requirements
- apply investigation procedures
- apply reporting procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to examine and maintain mine safety:

- site and equipment safety requirements
- legislative and site requirements and procedures
- site and legislative safety inspection requirements
- site geological, geographical and survey data
- shotfiring procedures and practices
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- risk management procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the examination and maintenance of mine safety • implementation of appropriate procedures and techniques for the safe, effective and efficient examination and maintenance of mine safety • working with others to plan, prepare and conduct the examination and maintenance of mine safety • provision of clear and timely instruction and supervision by the individual of those involved in mine safety • evidence of the consistent successful examination and maintenance of mine safety
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the examination and maintenance of mine safety
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the mine safety

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Interpret is defined as:	• the understanding needed by the person within their job role
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Operational information may include:	• mine layout and plan • previous shift inspection reports • personnel and equipment availability • work and equipment locations • production targets and other work requirements • incidents • hazards and potential hazards • coordination requirements/issues
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of Practice • manufacturer instructions • safe working or job procedures (or equivalent)
Coordinate may be to:	• plan activities • set priorities for activities • establish liaison channels with supervisors, management and workforce • ensure work and safety requirements are passed to and reinforced safety with operational personnel and contractors

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Inspections required include all safety aspects of:	• working on or around high walls or low walls • dumps • roads • working faces • stockpiles

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS403A Apply the mine occupational health and safety management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers applying the mine occupational health and safety management plan in the coal and metalliferous mining industries. It includes: identifying and interpreting the requirements of the plan; applying the plan; and monitoring the effectiveness of the OHS control measures.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and interpret the requirements of the Occupational Health and Safety Management Plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to mine occupational health and safety management plans 1.2. Access, interpret and clarify the ***Occupational Health and Safety Plan*** 1.3. Identify and clarify roles and responsibilities, as specified in the Occupational Health and Safety Plan and communicate and clarify individual responsibilities and tasks to relevant personnel 1.4. Identify, obtain and allocate ***resources and equipment*** required for the application of the Occupational Health and Safety Plan 1.5. Identify individual ***training*** needs 1.6. Identify, report and review the ***major hazards*** at the mine site in accordance with the Occupational Health and Safety Plan and review established procedures 1.7. Determine appropriate ***controls for hazards*** in accordance with the Occupational Health and Safety Plan and develop ***risk*** control measures in accordance with the Occupational Health and Safety Plan 1.8. Identify potential ***safety***, ***health or hygiene risks*** in accordance with the Occupational Health and Safety Plan
2. Apply Occupational Health and Safety Plan	2.1. Determine requirements of the Occupational Health and Safety Plan as applied to the mine site 2.2. Assess and communicate the nature and scope of the ***incidents*** in accordance with the emergency plan 2.3. Prepare an action plan in consultation with relevant work team members to maintain health and safety in accordance with the Occupational Health and Safety Plan 2.4. Apply and monitor occupational health and safety plans and procedures in accordance with the Occupational Health and Safety

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	Plan 2.5. Apply procedures for monitoring, recording and reporting on ***hazards*** in accordance with the Occupational Health and Safety Plan
3. Monitor effectiveness of OHS control measures	3.1. Monitor the application of health and safety procedures and control measures in accordance with the Occupational Health and Safety Plan 3.2. Monitor the activities of the work group in relation to any major ***hazards*** identified at the mine site 3.3. Monitor the use, effectiveness and appropriateness of safety procedures including adequate personal protective equipment, systems and measures 3.4. Monitor systems and procedures for manual and assisted handling 3.5. Monitor the health aspects relevant to work activities and requirements 3.6. Monitor adequacy of control measures and revise where necessary 3.7. Action or recommend changes to improve the health and safety aspects of the job 3.8. Investigate and report any accident or near miss 3.9. Maintain OHS ***records of work injury***, ***incidents***, ***health and hygiene issues*** in accordance with OHS System and Plan and relevant legislation 3.10. Report OHS issues which need resolving by others

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply the mine occupational health and safety management plan:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information
- communicate ideas and information
- plan and organise activities
- prepare and document procedures in a system
- apply and monitor mine site procedures and systems
- apply risk management processes and techniques
- conduct enquiries/investigations and prepare reports
- access, evaluate and apply data from monitoring systems and equipment / plant
- work with others and in teams
- identify health & hygiene training needs
- apply review and audit processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply the mine occupational health and safety management plan:

- legislative and industry OHS standards and compliance requirements
- appropriate work processes
- appropriate health and hygiene standards
- hazard identification and risk management
- observation and inspection methods
- potential impacts of drug and substance abuse on fitness for work
- personal protective equipment and measures
- manual handling codes and practices
- mine hazards associated with :
  - hazardous substances, dusts, noise, vibration
  - the mining processes
  - explosives (where used)
  - high-wall/low-wall failure and water ingress
  - mining equipment and haul roads
- emergency procedures

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- plant isolation techniques
- conventional signage techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying mine occupational health and safety management plan • implementation of appropriate procedures and techniques for the safe, effective and efficient application of mine occupational health and safety management plans • working with others to plan, prepare and apply mine occupational health and safety management plans • provision of clear and timely instruction and supervision by the individual of those involved in applying mine occupational health and safety management plans • evidence of the consistent successful application of the mine occupational health and safety management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and apply mine occupational health and safety management plans
	  • provision of clear and timely instruction and supervision by the individual of those involved in the application of the mine occupational health and safety management plan

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Occupational Health & **Safety Plan** and system:	• Should be available for each mine. This would outline he system of managing the mine to ensure it can be operated safely and specific plans to control any established hazards.
Resources and materials may include:	• selection and purchasing procedures • materials safety data sheets (MSDS) • risk assessment leading to standard operating procedures or plant mods • health and safety audits • training requirements for competency to operate • maintenance procedures
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Training may include:	• induction • competency training for work activities • safety meetings • involvement in defining work procedures • tool box talks and circular updating safety information • safety training sessions • input into work procedures or mine development plans • safety, health and hygiene inspections
Major hazards in mines may include:	• explosives and blasting • potential for slope instability

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	• potential for fire or flooding • potential for major machinery collapse • health concerns, e.g. relating to specific materials being mined • safety concerns, e.g. relating to the method of mining, material properties
Controls for hazards may include:	• elimination remove activity, engineering out hazards • substitution use less hazardous materials, substances or processes • separation isolate hazards from person by guarding, space or time separation • administration adjusting the time or conditions of risk exposures • training improving competency making tasks less hazardous to perform • personal protective equipment (used as last resort) appropriately designed and properly fitted equipment to allow safety and health to be maintained in carrying out duties where there is some risk from exposure
Risk is defined as:	• The chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood

Safety, **health and hygiene risks** may include those resulting from:	• shift work and lack of sleep resulting in fatigue
	• sanitation and hygiene requirements, including:
	  • potable water
	  • cleanliness and sanitation
	  • vermin control and eradication
	• chemical and hazardous materials, including:
	  • industrial chemicals
	  • diesel, oils, hydraulic oils
	  • asbestos
	  • explosives
	• dust, including:
	  • asthma, silicosis, asbestosis and other diseases of the lung
	  • failure of monitoring and analysis of dust,
	  • failure of dust control systems include filters, isolation, personal protective equipment
	• failure to apply mine transport networks and

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	rules, including: • route • traffic rules • signage and barriers • failure to apply personal protection, including those for: • hearing • eyes (industrial, radiation, ultra-violet, infra-red radiation, dust) • respiratory protective devices • hand, head, hair, feet • protective clothing • safety belts and harnesses • failure to apply safety signs • stress and stressors, including: • drugs may, including: • alcohol, nicotine • prescription drugs • illicit drugs and substances • impact of drugs on fitness for work • vibration hazards resulting from: • hand operated equipment • drilling equipment • corrugated roads • springs and seating • noise management controls • heat/cold exposure protection
Incident is:	• any unplanned event resulting in, or having a potential for injury, ill health, damage or other loss
Records of injury, **incidents**, **health and hygiene issues** may include:	• classification (injury, fatal injury, work days lost, employees, time frames etc) • reporting parameters • statutory reporting requirements • investigation outcomes • employee rehabilitation programs

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Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS404A Implement and monitor health and hygiene management systems

Modification History

Not applicable.

Unit Descriptor

This unit covers implement and monitor health and hygiene management systems in the coal and metalliferous mining industries. It includes: identifying the effects and symptoms associated with workplace health and hygiene; identifying and monitoring health and hygiene standards and systems; implementing and monitoring health and hygiene protection measures for individuals; identifying, implementing and monitoring control measures for operational health and hygiene hazards; and auditing and reviewing systems in respect of health and hygiene measures.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify the effects and symptoms associated with workplace health and hygiene	1.1. Access, interpret and apply ***compliance documentation*** relevant to health and hygiene management systems 1.2. Identify the ***causal chain*** and focus of ***common diseases*** 1.3. Identify the effects and symptoms of ***stress*** on employee health and effectiveness 1.4. Identify the effects and symptoms of ***shift work*** on employee health and effectiveness 1.5. Identify the effects and symptoms of ***alcohol and other drug/substance*** abuse on employee health and effectiveness
2. Identify and monitor health and hygiene standards and systems	2.1. Identify and interpret legislative, industry and site standards for ***health and hygiene*** 2.2. Identify and monitor health and hygiene requirements within the mine operational planning and management systems 2.3. Identify and monitor health and hygiene requirements within the mine safety management plans 2.4. Monitor and review ***work injury recording systems*** as required by legislation and organisational guidelines 2.5. Monitor and review ***sanitation and hygiene*** systems as required by legislation and organisational guidelines 2.6. Monitor and review ***chemical and hazardous substances control systems*** as required by legislation and organisational guidelines 2.7. Implement and monitor ***atmosphere*** and ***dust*** control measures in accordance with the ventilation management plan
3. Implement and monitor health and hygiene protection measures for individuals	3.1. Implement, monitor and review health and hygiene ***training*** systems and programs 3.2. Implement and monitor ***personal protective equipment*** systems and measures and monitor the effectiveness of protection 3.3. Resource, implement and monitor systems and procedures for manual and assisted handling

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4. Identify, implement and monitor control measures for operational health and hygiene hazards	4.1. Identify, implement and monitor control measures and standards related to ***mine lighting*** 4.2. Identify, implement and monitor control measures and standards related to ***vibration*** 4.3. Identify, implement and monitor control measure and standards related to ***noise*** 4.4. Identify, implement and monitor control measures and standards associated with exposure to extremes of ***heat***/***cold*** 4.5. Identify, implement and monitor control measures associated with ***equipment and materials*** 4.6. Identify, implement and monitor air quantity and quality control measures 4.7. Identify, implement and monitor control measures and standards related to the handling, storage and conveyance of ***explosives*** 4.8. Identify, implement and monitor control measures and standards related to radiation and radiation sources
5. Audit and review systems in respect of health and hygiene measures	5.1. Review the effectiveness of health and hygiene management, as part of both operational and safety hazard management systems, for compliance with legislation, industry practice and the appropriate mine management plan 5.2. Investigate and respond to circumstances which give rise to or threaten the health and hygiene of individuals, or refer to the appropriate authority for response 5.3. Audit and/or review the health and hygiene training program/content for currency, relevance and compliance 5.4. Review and/or audit recording and reporting systems for compliance with legislation, industry and mine requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement and monitor health and hygiene management systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information
- communicate ideas and information
- plan and organise activities
- prepare and document systems and procedures
- apply risk management processes and techniques
- conduct enquiries / investigations and prepare reports
- access, evaluate and apply data from monitoring systems and equipment / plant work with others and in teams
- validate training analysis results
- apply review and audit processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement and monitor health and hygiene management systems:

- legislative and industry health and hygiene standards and compliance requirements
- health and hygiene systems development processes and techniques
- procedures and techniques for establishing health and hygiene objectives and criteria
- health and hygiene management systems information procedures
- risk management and control theory and processes
- fundamentals of human disease and injury
- causes, symptoms and impacts of stress on employees
- potential impacts of drug and substance abuse
- individual medical standards and examination systems
- rehabilitation processes and techniques
- personal protective equipment and measures
- manual handling codes and practices
- sanitation and hygiene systems and procedures
- mine hazards associated with hazardous substances
- chemical information management systems (MSDS or equivalent)

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- health hazards associated with atmosphere and the likely impacts on personnel
- atmosphere and dust control and protection systems
- health hazards and controls associated with mining processes and the likely impacts on personnel
- health hazards and controls associated with exposure to heat / cold conditions
- health hazards associated with:
  - explosives
  - radiation and radiation sources
  - equipment and plant
  - lighting
  - vibration
  - noise
- health and hygiene training requirements and systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation and monitoring of health and hygiene management systems • implementation of appropriate procedures and techniques for the safe, effective and efficient implementation and monitoring of health and hygiene management systems • working with others to plan, prepare, implement and monitor health and hygiene management systems • provision of clear and timely instruction and supervision by the individual of those involved in applying health and hygiene management systems • evidence of the consistent successful implementation and monitoring of health and hygiene management systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare, implement and monitor health and hygiene management systems
	  • provision of clear and timely instruction and supervision by the individual of those involved in the application of health and hygiene management systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

The **causal chain** and focus of disease may include:	• basic cell structure
	• sites where toxic substances can cause disease
	• routes of entry, including:
	  • mechanisms covering inhalation
	  • absorption
	  • ingestion
	• routes of exit
	• physic injuries

Common diseases may include the fundamental causes and effects of:	• lung disease • chronic bronchitis • emphysema • heart disease • pulmonary oedema • pulmonary fibrosis • cancers • hypersensitivity • occupational asthma • alveoli tis • dermatitis • allergic contact dermatitis • skin cancer • poisoning • nervous system disease • circulatory system disease
Common disease related to routes	• liver

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of exit may include those involving:	• kidney • bladder • reproductive systems • cover the latency potential
Causes of **stress** (stressors) may include:	• environmental factors • bad workplace design • work hazards • job design • job monotony • contractual conditions • esteem values • relationship difficulties • lack of control • physical impairments
Stress effects may include:	• fatigue • anxiety • hypertension • depression • hostility and aggression • psychosomatic complaints • neuroses They may also be associated/linked with: • bronchial asthma • nervous rashes • diabetes • some cancers
Shift work responses are related to circadian rhythms (24 hour rhythms) and may result in:	• disturbed or inadequate sleep • fatigue • depression and neuroses • dependence on drugs • susceptibility to sickness • disturbed family and social life
Alcohol and other drug/substances may include:	• alcohol • nicotine • prescription drugs • other medicinal drugs • illicit drugs and substances
Health and hygiene legislative, industry and site, standards may include:	• policy • accountability • supervision • workforce involvement

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	• physical environment • risk assessment practices • work planning • external information • medical/first-aid • rehabilitation
Work injury recording systems may include:	• definitions (occupational injury, fatal injury, work days lost, employees, time frames) • data management • reporting parameters • reporting • investigation
Sanitation and hygiene infrastructure may include:	• systems for water (potable) and waste water • maintenance of cleanliness and sanitation • toilets • washing facilities • hand basins • crib rooms / dining areas • shower / changing facilities • vermin control and eradication • drainage of stagnant water • waste decaying wood • refuse disposal • sheltered reception areas • regular checking processes
Chemical and hazardous substances in mines may include:	• industrial chemical • diesel • hydraulics • oils • liquefied petroleum gas • polyurethane • asbestos
Chemical and hazardous substance control systems may include:	• elimination • substitution • isolation and protection • engineering controls (ventilation, containment etc) • safe work practices • personal protective equipment • new product management measures (need, assessment, controls, surveillance, induction and training)

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Atmosphere and ventilation measures may include:	• identification of air standards (oxygen, impurities, contaminants, dust) • establishment of appropriate evaluation and air quality control systems • assessment of protection needs • authorisation for nominated activities • maintenance of adequate records of air quality levels
Dust control measures may include:	• establishment of a dust control program • monitoring and analysis of dust • identification and responses to dust problems • selection and application of appropriate methods to determine dust concentrations
Training and re-training may include:	• induction • on-the-job discussions • safety meetings • OHS committees • circulars • safety training sessions • encouragement incentives • input into developments • health and hygiene inspections
Personal protection may include those for:	• hearing • eyes (industrial, radiation, ultra-violet, infra-red radiation) • respiratory protective devices • hand (gloves) • head • feet (boots) • long hair • protective clothing • safety belts and harnesses • safety signs
Mine lighting requirements may include:	• general work areas • personal lighting for underground use • machinery mounted lighting systems • visual displays • emergency lighting systems
Vibration may contribute to, or result in:	• bone damage • stomach and digestive problems • heart problems • varicose veins

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	• varicocle
	• piles
	• disruption to the nervous system resulting in:
	  • weakness
	  • fatigue
	  • loss of appetite
	  • irritability
	  • headache
	  • insomnia
	  • impotence

Vibration hazard analysis may include:	• extent of damage factors (time of exposure, vibration frequency rate, amplitude of vibration) • types of vibration (whole body vibration, VLF whole body vibration, LF whole body vibration • hand-arm vibration (vibration white fingers)
Vibration controls may include:	• vibration surveys • establishment of vibration limits • establishment of targets for vibration limits • provision of training in vibration measurement • establishment, implementation and monitoring of vehicle / equipment design criteria (operation, seating, mountings, portable machinery)
Noise management controls may include:	• establishment of noise limits • regular measurement and recording of noise • engineering / design of noise controls • establishment of noise protection zones • identification • provision and testing of noise protection equipment • adequate training of personnel • an appropriate audiometric testing regime
Heat/cold exposure protection may include:	• adequate training of personnel • measurements of heat stress index • monitoring of index and employees • establishment of cool rest areas • provision of cool water • provision of canopies, cabins and appropriate clothing
Equipment and materials control	• selection and acquisition procedures

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measures may include:	• materials safety data sheets (MSDS) • risk assessment • health and safety audits • work procedures • training requirements for operation • maintenance procedures
Explosive control systems may include:	• legislative requirements • selection and procurement • storage • conveyance • handling • handling of old / deteriorated stock • misfires • entry after blasting • charging • inspections • initiation • storms • electronic risks

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS405A Maintain standard procedures and safe working practices

Modification History

Not applicable.

Unit Descriptor

This unit covers the maintaining of standard procedures and safe working practices in the on shore and off shore oil and gas drilling industry. It includes: conducting daily rig maintenance and safety inspections, and complying with Government Regulations and Company Policies.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Conduct daily rig maintenance and safety inspection	1.1. Access, interpret and apply ***compliance documentation*** relevant to maintaining of standard procedures and safe working practices 1.2. Undertake rig safety checks before tour and discuss equipment problems with previous tour driller 1.3. Spot check maintenance procedures against plans, identify and rectify anomalies and maintain records 1.4. Conduct pre-tour occupational health and safety meetings with team members
2. Comply with Government Regulations and Company Policies	2.1. Communicate regulations and procedures for controlling work and hazards to team members both on the rig floor and in camp accommodation areas 2.2. Allocate employees' job responsibilities in accordance with regulations/company policies and within the bounds of their competence 2.3. Ensure team work rules are understood, applied and modelled by all crew members 2.4. Ensure regulations are obeyed by crew in line with statutory compliance 2.5. Constantly assess rig operators against regulations and policies

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to maintain standard procedures and safe working practices:

- apply legislative, organisation and site requirements and procedures
- conduct rig inspections in accordance with statutory/company regulations
- allocate job responsibilities
- manage teams
- negotiate and resolve conflict
- apply policies and procedures
- communicate effectively to crews/teams
- maintain compliance
- maintain operating records
- solve problems

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to maintain standard procedures and safe working practices:

- government regulations
- company policies and procedures
- client policies and procedures
- occupational health and safety compliance
- rig safety procedures and reporting
- conflict resolution
- negotiation skills
- problem solving techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the maintenance of standard procedures and safe working practices • implementation of appropriate procedures and techniques for the safe, effective and efficient maintenance of standard procedures and safe working practices • working with others to ensure that standard procedures and safe working practices are applied • provision of clear and timely instruction and supervision by the individual of those involved in applying standard procedures and safe working practices • evidence of the consistent successful maintenance of standard procedures and safe working practices
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular work sites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to ensure standard procedures and safe working practices are applied
	  • provision of clear and timely instruction and supervision by the individual of those involved in applying standard procedures and safe working practices

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevantcompliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Records to be maintained include:	• reports to rig manager • short notes • maintenance sheets • safety checks • inventories • spare parts order lists • employee evaluation forms
Communication occurs between:	• crew • operations representative • rig manager/superintendent • previous tour driller
Communication channels include:	• two-way radio • hand signals • telephone • public address system • written work instructions • intranet or internet based
Regulations may include:	• Petroleum Acts relating to submerged lands • AETC (PSLA) Petroleum Submerged Lands Act (offshore) • occupational health and safety • environmental

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Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS601A Establish and maintain the OHS management system

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintenance of the OHS management system in resources and infrastructure industries. It includes establishing and maintaining: the framework of the system; participative arrangements for the management of OHS, procedures for identifying hazard, assessing risk and treating risks; organisational procedures for dealing with unplanned incidents; an OHS training program; a system for OHS records; planning and preparing for the implementation of the system; and evaluation of the organisation's OHS system and related policies, procedures and programs.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish and maintain the framework for the OHS system	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining OHS management systems 1.2. Develop OHS ***policies***, ***objectives and procedures*** that clearly express the organisation's commitment with respect to OHS, and how relevant OHS legislation will be implemented, consistent with overall organisational policies 1.3. Clearly define, allocate and include in job descriptions and duty statements for all ***relevant positions*** OHS ***responsibilities*** and duties, which will allow implementation and integration of the OHS Management System 1.4. Identify, seek and/or provide in a timely and consistent manner financial and human resources for the operation of the ***OHS Management System*** 1.5. Provide and explain information on the OHS Management System and procedures in a form that is readily accessible to employees
2. Establish and maintain participative arrangements for the management of OHS	2.1. Establish and maintain appropriate consultative processes in ***consultation*** with employees and their representatives in accordance with relevant OHS legislation and consistent with the organisation's overall process for consultation 2.2. Ensure issues raised through participation and consultation are dealt with and resolved promptly and effectively in accordance with procedures for issue resolution 2.3. Ensure that information about the outcomes of participation and consultation is provided in a manner accessible to employees
3. Establish and maintain procedures for identifying hazards	3.1. Develop, maintain and ensure integration of a procedure for ongoing identification of ***existing and potentialhazards*** with systems of work and procedures 3.2. ***Monitor*** activities to ensure that ***hazard identification*** procedure is adopted

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	effectively throughout the organisation 3.3. Ensure procedures are in place and applied for hazard identification at the planning, design and evaluation stages of any change in the workplace to ensure that new hazards are not created
4. Establish and maintain procedures for assessing risk	4.1. Ensure appropriate ***assessment of risks*** presented by identified hazards is carried out 4.2. Develop and ensure integration of a procedure for ongoing assessment of risks within systems of and work and procedures 4.3. Monitor activities to ensure that risk assessment procedure is adopted effectively throughout the organisation 4.4. Ensure procedures are in place for risk assessment to be addressed at the planning, design and evaluation stages of any change within the organisation to ensure that risks are not created
5. Establish and maintain procedures for treating risks	5.1. Develop and ensure implementation of measures to ***control assessed risks*** in accordance with relevant legislation, code of practice and trends identified from the OHS records system 5.2. Ensure the implementation of interim solutions until a permanent control measure is developed when measures which treat a risk at its source are not immediately practicable 5.3. Develop and ensure integration of procedures for ongoing ***control of risks*** within general systems of work and procedures 5.4. Monitor activities to ensure that the ***risk treatment*** procedure is adopted effectively throughout the organisation 5.5. Ensure risk treatment is addressed at the planning, design and evaluation stages of any change within the organisation to ensure that adequate risk control measures are included 5.6. Identify inadequacies in existing risk treatment measures and seek and provide resources to enable implementation of new

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	measures according to appropriate procedures
6. Establish and maintain organisational procedures for dealing with unplanned incidents	6.1. Identify the range of most likely potential unplanned ***incidents*** from an analysis of likely risks 6.2. Develop procedures in consultation with appropriate emergency services that would treat the risks associated with the potential events that meet legislative requirements as a minimum 6.3. Provide appropriate information and training to all employees to enable implementation of the correct procedures in all relevant circumstances
7. Establish and maintain an OHS training program	7.1. Develop and ensure implementation of an OHS training program to identify and fulfil employees' OHS training needs
8. Establish and maintain a system for OHS records	8.1. Establish and monitor the system for keeping OHS records to allow identification of patterns of occupational injury and disease within the organisation
9. Plan and prepare for the implementation of the OHS management system	9.1. Identify and interpret the legislative and site requirements related to the OHS management system 9.2. Access and interpret the OHS management system 9.3. Identify, clarify and communicate to all personnel roles and responsibilities 9.4. Identify, forecast, obtain and allocate/schedule ***resources*** required for the implementation of the OHS management system 9.5. Implement OHS management training program. 9.6. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to OHS management procedures
10. Evaluate the organisation's OHS system and related policies, procedures and programs	10.1. Assess the effectiveness of the OHS management system and related policies, procedures and programs 10.2. Develop and ensure implementation of improvements to the OHS management system to ensure more effective

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	achievement of the organisation's aims with respect to OHS 10.3. Assess compliance with ***OHS legislation*** and code of practice to ensure that legal OHS standards are maintained as a minimum

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain the OHS management system:

- apply legislative, organisation and site requirements and procedures
- access and analyse archival and historical information related to the workplace safety matters
- access, interpret and apply technical OHS information
- apply and manage research techniques and activities
- apply OHS systems audit processes
- communicate effectively in the workplace
- apply procedures for developing and introducing practices to improve the work environment
- apply procedures for developing and maintaining risk management procedures and policies
- apply procedures for developing and maintaining statutory/legal and organisational policies and procedures
- explain complex information to superiors/subordinates
- apply records and documents maintenance requirements and procedures
- apply procedures for monitoring and deciding on changes to process
- provide coaching and mentoring support
- take a leading role in initiating action and making decisions
- use effective consultative mechanisms to negotiate processes and procedures appropriate to workplace safety

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain the OHS management system:

- OHS legislation, policies and code of practice requirements and procedures
- OHS auditing procedures
- legislative and site rules, policies, procedures and regulations
- company policies
- duty of care principles
- training design and management requirements and procedures
- emergency procedures
- strategic planning procedures

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- human resource management requirements and procedures
- risk management processes and techniques
- action planning methods
- continuous improvement processes

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining OHS management systems • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of OHS management systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of procedures that best meet the required outcomes • working with others to establish and maintain OHS management systems • timely completion of the establishing and maintenance of OHS management systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of procedures that best meet the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain of OHS management systems
	  • timely gaining of approval of OHS management systems
	  • provision of clear, timely required support and advice on the application of OHS management systems

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
OHS (**occupational health and safety**) **policy** is:	• a statement by the organisation of its intentions and principles in relation to its overall OHS performance which provides a framework for action and for the setting of its OHS objectives and targets
Safety is:	• a state in which the risk of harm to persons or damage is limited to an acceptable level
OHS objectives are:	• goals in terms of OHS performance, arising from the OHS policy that an organisation sets itself to achieve, and which are quantified where practicable
Relevant positions will include:	• managers • supervisors • OHS officer/manager • First Aid officers
Responsibility is:	• being accountable for the achievement of objectives
Occupational Health and Safety Management System (**OHSMS**) is:	• that part of the overall management system which includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the OHS policy, and so managing the OHS risks associated with the business of the organisation
OHS Management System	• commitment and policy • planning

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principles are to include:	• implementation • measurement and evaluation • review and improvement
Consultation processes may include:	• OHS committees • consultation with health and safety representatives • issue resolution procedures • participative/consultative procedures conducted by supervisory staff within the area of managerial responsibility
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Existing and potential hazards can be identified from:	• checklists • hazard identification processes • accident and incident reports • significant incident reports
Monitoring of activities may include:	• review of written reports • performance appraisal • auditing procedures
Hazard identification is:	• the process of recognising that a hazard exists and defining its characteristics
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Risk assessment is defined as:	• the overall process of risk analysis and risk evaluation
Risk control is defined as:	• that part of risk management which involves the implementation of policies, standards, procedures and physical changes to eliminate or minimise adverse risks
Risk treatment is:	• the selection and implementation of appropriate options for dealing with risk
Incident is:	• any unplanned event resulting in, or having a potential for injury, ill health, damage or other loss
OHS legislation may include:	• maintenance of records for statutory/legal breaches • provision of information and training • regulations and code of practice relating to statutory/legal compliance • site representatives and committees

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	• issue resolution

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS602A Incorporate health and hygiene factors into mine management

Modification History

Not applicable.

Unit Descriptor

This unit covers incorporating health and hygiene factors into coal mine management. It includes: identifying the fundamentals of human disease and injury; incorporating health and hygiene factors into the work environment and mine safety management plans; establishing health and hygiene protection measures for individuals; establishing control measures for operational health and hygiene hazards; and incorporating health and hygiene factors within mine audit and review systems.

Application of the Unit

This unit is appropriate for those working in a management or technical specialist role, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify the fundamentals of human disease and injury	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***health and hygiene*** management in coal mines 1.2. Identify the ***causal chainand focus of common diseases*** 1.3. Identify the causes, symptoms and impacts of ***stress*** on employee health and effectiveness 1.4. Identify the potential impacts of ***shift work*** on employee health and effectiveness 1.5. Identify the potential impacts of ***drug and substance*** abuse on employee health and effectiveness
2. Incorporate health and hygiene factors into the work environment	2.1. Identify, analyse and use legislative and industry standards as the basis for health and hygiene activities 2.2. Incorporate health and hygiene factors into mine operational planning and management systems
3. Incorporate health and hygiene factors into mine safety management plans	3.1. Establish and resource ***work injury recording systems*** 3.2. Establish ***sanitation and hygiene*** infrastructure and systems 3.3. Establish ***chemical and hazardous substances control*** systems 3.4. Establish atmospheric and ***dust control measures*** 3.5. Establish and maintain ***mine transport networks and rules***
4. Establish health and hygiene protection measures for individuals	4.1. Establish, review and update individual ***medical recruitment and re-appraisal measures*** 4.2. Establish and resource health and hygiene training systems and programs. 4.3. Establish and resource ***personal protectiveequipment*** systems and measures. 4.4. Establish and resource systems and procedures for manual and assisted handling
5. Establish control measures for	5.1. Analyse health hazards related to ***mine***

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operational health and hygiene hazards	***lighting*** and establish systems and procedures 5.2. Analyse health hazards associated with ***vibration*** and establish systems and procedures 5.3. Analyse health hazards associated with ***noise*** and establish systems and procedures 5.4. Analyse health hazards associated with exposure to extremes of ***heat***/***cold*** and establish systems and procedures 5.5. Analyse health hazards associated with ***equipment and materials*** and establish systems and procedures 5.6. Analyse health hazards associated with atmospheric conditions and incorporate control measures and systems into the ***ventilation***/***gas management*** plans 5.7. Analyse health hazards associated with the handling, storage and conveyance of ***explosives*** and establish systems and procedures 5.8. Analyse health hazards associated with radiation and radiation sources and establish systems and procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to incorporate health and hygiene factors into mine management:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information
- communicate ideas and information
- apply procedures for planning and organising activities
- apply procedures for preparing and documenting policies, plans and procedures
- apply risk management processes and techniques
- apply procedures for conducting enquiries / investigations and preparing reports
- access, evaluate and apply data from monitoring systems and equipment / plant work with others and in teams
- apply review and audit processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to incorporate health and hygiene factors into mine management:

- legislative and industry health and hygiene standards and compliance requirements
- health and hygiene policy requirements
- procedures and techniques for establishing health and hygiene objectives, targets, performance indicators and criteria
- health and hygiene management systems information support requirements and options
- risk management and control theory and processes
- continuous improvement processes and techniques
- fundamentals of human disease and injury
- causes, symptoms and impacts of stress on employees
- potential impacts of drug and substance abuse
- individual medical standards and examination systems
- rehabilitation options, processes and techniques
- personal protective equipment and measures
- manual handling codes and practices
- sanitation and hygiene infrastructure and operational requirements
- mine hazards associated with hazardous substances and the likely impacts on

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personnel
- chemical information management systems
- mine hazards associated with atmosphere and the likely impacts on personnel
- atmosphere and dust control and protection systems
- mine hazards associated with mining processes and the likely impacts on personnel
- health hazards associated with exposure to heat/cold conditions
- hazards associated with explosives
- health hazards associated with radiation and radiation sources
- mine hazards associated with equipment and plant and the likely impacts on personnel
- equipment/plant safeguarding options and techniques
- equipment/plant isolation techniques
- health hazards associated with lighting
- health hazards associated with vibration
- health hazards associated with noise
- mine transport network design and planning requirements
- conventional signage techniques
- area isolation techniques
- health and hygiene training requirements and systems

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Evidence Guide

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Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the incorporation of health and hygiene requirements into mine management • implementation of procedures and techniques for the safe, effective and efficient incorporation of health and hygiene factors into mine management • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to incorporate health and hygiene requirements into mine management • timely completion of the incorporation of health and hygiene requirements into mine management
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to incorporate health and hygiene requirements into mine management
	  • consistent and timely gaining of approval of

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	health and hygiene requirements in mine management • provision of clear, timely required support and advice on the application of health and hygiene requirements in mine management
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Health and hygiene factors for inclusion in safety systems and plans may include	• policy • accountability • supervision • workforce involvement • physical environment • risk assessment practices • work planning • external information • medical / first-aid • rehabilitation

The causal chain and focus of common disease may include:	• basic cell structure
	• basic DNA
	• sites where toxic substances can cause disease
	• routes of entry
	• routes of exit
	• physic injuries
	• routes of entry for disease, including:
	  • the mechanisms covering inhalation
	  • absorption
	• ingestion

Common disease may include the fundamental causes and effects of:	• lung disease • chronic bronchitis • emphysema • heart disease • pulmonary oedema

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	• pulmonary fibrosis • cancers • hypersensitivity • occupational asthma • alveoli tis • dermatitis • allergic contact dermatitis • skin cancer • poisoning • nervous system disease • circulatory system disease
Common disease related to routes of exit may include:	• liver • kidney • bladder • reproductive systems • cover the latency potential
Stressors (cause of stress) may include:	• environmental factors • bad workplace design • work hazards • job design • job monotony • contractual conditions • esteem values • relationship difficulties • lack of control • physical impairments
Stress effects may include:	• fatigue • anxiety • hypertension • depression • hostility and aggression • psychosomatic complaints • neuroses • They may be associated/linked with: • bronchial asthma • nervous rashes • diabetes • some cancers
Shift work responses are related to circadian rhythms (24 hour rhythms) and may result in:	• disturbed or inadequate sleep • fatigue • depression and neuroses

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	• dependence on drugs • susceptibility to sickness • disturbed family and social life
Drugs and substances may include:	• alcohol • nicotine • drugs and prescription • other medicinal drugs • illicit drugs and substances
Work injury recording systems may include:	• definitions (occupational injury, fatal injury, work days lost, employees, time frames) • data management • reporting parameters • reporting • investigation
Sanitation and hygiene infrastructure may include:	• systems for water (potable) and waste water • maintenance of cleanliness and sanitation • toilets • washing facilities • hand basins • crib rooms / dining areas • shower / changing facilities • vermin control and eradication • drainage of stagnant water • waste decaying wood • refuse disposal • sheltered reception areas • regular checking processes
Chemical and hazardous substances in mines may include:	• industrial chemical • diesel • hydraulics • oils • liquefied petroleum gas • polyurethane • asbestos
Chemical and hazardous substance control measures may include:	• elimination • substitution • isolation and protection • engineering controls (ventilation, containment etc) • safe work practices • personal protective equipment and new product management measures (need,

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	assessment, controls, surveillance, induction and training)
Dust control measures may include:	• establishment of a dust control program • monitoring and analysis of dust • identification and responses to dust problems • selection and application of appropriate methods to determine dust concentrations
Mine transport networks and rules may include:	• route • speed limits • controls • signage • mine and mine working planning, including: • health and hygiene factors related to historical area region data • mine plans (currency comprehensives, accuracy, surveys, reporting systems (dangerous occurrences, conditions, incidents) • materials handling systems and capacities • hung pass / chutes / bins systems • confined spaces and trenches and similar hazardous constructions
Medical recruitment and re-appraisal measures may include:	• common medical examination requirements • frequency of examinations and hot/cold work replacement assessment • common medical examination coverage including: • medical history • physical characteristics (height, weight, blood pressure, vision, hearing) • physical examination (central nervous system, digestive system, heart and lungs, muscular-skeletal system) • biological measurement (urinalysis, blood tests) • electrocardiograms • stress tests
Personal protection may include those for:	• hearing • eyes (industrial, radiation, ultra-violet, infra-red radiation) • respiratory protective devices • hand (gloves) • head • feet (boots)

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	• long hair • protective clothing • safety belts and harnesses
Mine lighting requirements may include:	• general work areas • personal lighting for underground use • machinery mounted lighting systems • visual displays • emergency lighting systems

Vibration hazards may contribute to, or result in:	• bone damage
	• stomach and digestive problems
	• heart problems
	• varicose veins
	• varicocle
	• piles
	• disruption to the nervous system resulting in:
	  • weakness
	  • fatigue
	  • loss of appetite
	  • irritability
	  • headache
	  • insomnia
	• impotence

Vibration hazard analysis may include:	• extent of damage factors (time of exposure, vibration frequency rate, amplitude of vibration) • types of vibration (whole body vibration, VLF whole body vibration, LF whole body vibration • hand-arm vibration (vibration white fingers) • vibration controls, including vibration surveys, establishment of vibration limits • establishment of targets for vibration limits • provision of training in vibration measurement • establishment, implementation and monitoring of vehicle/equipment design criteria (operation, seating, mountings, portable machinery)
Noise management controls may include:	• establishment of noise limits • regular measurement and recording of noise • engineering/design of noise controls • establishment of noise protection zones • identification

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	• provision and testing of noise protection equipment • adequate training of personnel • appropriate audiometric testing regime
Heat exposure protection may include:	• adequate training of personnel • measurements of heat stress index • monitoring of index and employees • establishment of cool rest areas • provision of cool water • provision of canopies, cabins and approaching clothing
Equipment and materials safety strategies may include:	• selection and acquisition procedures • materials safety data sheets (MSDS) • risk assessment • health and safety audits • work procedures • training requirements for operation • maintenance procedures
Atmosphere and **ventilation** measures may include:	• identification of air standards (oxygen, impurities, contaminants, dust) • establishment of appropriate evaluation and air quality control systems • assessment of protection needs • authorisation for nominated activities • maintenance of adequate records of air quality levels
Explosive control systems may include:	• legislative requirements • selection and procurement • storage • conveyance • handling • handling of old / deteriorated stock • misfires • entry after blasting • charging • inspections • initiation • storms • electronic risks
Training may include:	• induction • on-the-job discussions • safety meetings

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	• OHS committees • circulars • safety training sessions • encouragement incentives • input into developments • health and hygiene inspections

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBE201A Conduct aeration process

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of aeration processes in the metalliferous mining industry. It includes planning and preparing for aeration activities, starting up equipment in sequence, operate and monitor equipment, conduct housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for aeration activities	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Perform equipment ***pre-start checks*** 1.6. Identify, address and report potential risks and hazards 1.7. Identify, address and report ***environmental issues*** 1.8. Adhere to emergency procedures
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configurations and system requirements 2.2. Confirm ***plant*** is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine ***aeration*** efficiency 3.2. Continuously inspect and ***monitor*** operations/plant and catchment areas to identify process defects and potential problems 3.3. Adjust equipment to approved ***operating parameters*** to optimise and maintain efficient aeration to meet product quality targets 3.4. Pass on end of shift information to oncoming shift
4. Conduct housekeeping activities	4.1. ***Clean plant*** to maintain condition of all equipment 4.2. Manage and report hazards
5. Shutdown in sequence and/or isolate equipment	5.1. ***Shutdown*** or isolate equipment based on process and safety requirements 5.2. Perform ***post shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct aeration processes:

- apply legislative, organisation and site requirements and procedures for conducting aeration processes
- find faults
- interpret reports
- lift (manual, cranes and loads)
- use safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct aeration activities:

- breakdown procedures
- contaminant identification
- aeration process
- emergency procedures
- environmental procedures
- equipment limitations and operating parameters
- equipment safety requirements
- repair requirements
- aeration plant isolation procedures
- metallurgical and technical data
- OHS procedures associated with conducting aeration processes
- operational procedures and checks
- site procedures
- site safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting aeration processes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of aeration processes • working with others to undertake and complete the aeration process in a way that meets all of the required outcomes • consistent timely completion of aeration processes that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the aeration process

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Pre-start checks may include:	• availability of equipment (e.g. conveyor) • detection of conditions that are unusual • personnel availability • job requirements • levels • walk through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
Start-up procedures may include the inspection of:	• agitators • cameras and monitors • interlocks • distribution control system • launders

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	• hydraulic system • pumping system • screen inspections • scuttling pumps • pipes and flanges • drive belts • valves • visual and audio warning devices and lights • suppression systems
Plant may include:	• agitators • blowers • valves • pumps • hoppers • vessels (aerator) • hoses • air/slurry/water lines • silences • tank (process liquor, reagent holder) • conveyors • weight and vibrating feeder
Indicator readings may measure:	• flow • current (e.g. agitators) • density • levels • restrictions • air flows • pressure • speed (e.g. pumps) • unusual noises • vibrations • power • temperature
Aeration methods may include:	• batch • continuous
Monitoring the aeration process may include the checking of:	• blockages and spillages • feed rates • mineral content • moisture levels • on stream analysis (OSA) • overloads

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	• pressures (e.g. in air lines) • power draw • wear and tear • emission (e.g. cyanide) • levels • hydrogen bubbles • end point testing (batch) • temperature
Operating parameters may include:	• reagent additions • reduce produce/feed/tonnes • hectalilte of processes liquor
Equipment and plant cleaning methods may include:	• hosing with water • high pressure cleaning
Shutdown procedures may include:	• cleaning of sparge lines • charge and empty discharge lines
Post-shutdown checks are like pre-start checks.	
Tests may include:	• magnetic tests • on-line conductivity • temperature measurements
Materials may include:	• slurry (reagent, dry product, liquor)
Contaminants are anything other than the ore. Common contaminants may include:	• oil • fuel • gases • organic materials • moisture

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIPBE202A Conduct digestion process

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of digestion processes in the metalliferous mining industry. It includes planning and preparing for digestion operations, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping operations, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for digestion operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel and plant 1.10. Use approved dust suppression and extraction methods 1.11. Ensure area is well ventilated before entry into work area
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and completes start-up checks according to plant configurations and system requirements 2.2. Confirm ***plant*** is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine efficiency 3.2. Continuously inspect and ***monitor*** operations/plant and catchment areas to digestion process defects and potential problems 3.3. Adjust equipment to approved operating parameters to optimise and maintain efficient digestion and to meet product quality targets 3.4. Add reagents to approved operating parameters 3.5. Carry out minor maintenance to maintain

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	condition of equipment 3.6. Complete all required documentation clearly, concisely and on time 3.7. Pass on end of shift information to oncoming shift
4. Conduct housekeeping activities	4.1. ***Clean plant*** to maintain condition of all equipment to ensure safe and efficient operations 4.2. Manage and report hazards to maintain a safe working environment
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown or isolate equipment based on process and safety requirements 5.2. Perform ***post shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct the digestion process:

- apply legislative, organisation and site requirements and procedures for conducting the digestion process
- diagnose faults
- identify and manage hazards
- handle hazardous goods
- interpret reports
- lift (manual, cranes and loads)
- maintain records
- report defects
- apply safe work practices
- troubleshoot
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct the digestion process:

- breakdown procedures
- contaminant identification
- digestion process (basic)
- emergency procedures
- environmental procedures
- equipment limitations and operating parameters
- equipment safety requirements
- hazardous goods procedures and consequences of spills and hazardous goods
- identifying repair requirements
- isolation procedures
- metallurgical and technical data (basic)
- OHS procedures
- operational procedures and checks
- pumping system and flow charts (pipeline and sprinkler systems)
- reagent types

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- sampling
  - site procedures
  - site safety requirements
  - types of ores (basic)
  - wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting the digestion process • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the digestion process • working with others to undertake and complete the digestion process in a way that meets all of the required outcomes • consistent timely completion of the digestion process that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the digestion process

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• compressors • distribution control systems (DCS) • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses
Pre-start checks may include:	• availability of equipment (e.g. conveyor) • detection of conditions that are unusual • personnel availability • job requirements • levels • walk through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills

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	• waste management and disposal • water quality
Start-up procedures may include:	• cameras and monitors • interlocks • distribution control system • flash vessels • launders • heat exchangers • hydraulic system • pumping system • screen inspections • scuttling pumps • pipes and flanges • drive belts • valves • vessels • visual and audio warning devices and lights • suppression systems
Plant may include:	• heat exchanger • burners • lines • gas train • vessels • conveyors • valves
Indicator readings may measure:	• flow • current (e.g. agitators) • density • levels • restrictions • pressure • speed (e.g. pumps) • unusual noises • vibrations • power • temperature
Monitoring the drying process may include:	• blockages and spillages • feed rates • mineral content • moisture levels • on stream analysis (OSA)

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	• overloads • pressures • power draw • temperature • wear and tear • emission (e.g. cyanide) • levels • laboratory results
Equipment and plant cleaning methods may include:	• hosing with water • high pressure cleaning
Post-shutdown checks are like pre-start checks.	
The methods used to optimise the plant may include:	• quantity of reagents • flow • temperature • pressure • A/C ratio • condensate quality
Materials may include:	• slurry • steam
Contaminants are anything other than the ore. Common contaminants may include:	• oil • fuel • gases • organic materials • moisture

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBE203A Conduct precipitation operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of precipitation operations in the metalliferous mining industry. It includes planning and preparing for precipitation operations, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within: Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for precipitation operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel and ***plant*** 1.10. Use approved dust suppression and extraction methods 1.11. Ensure area is well ventilated before entry into work area
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine ***precipitation*** efficiency 3.2. Continuously inspect and ***monitor*** operations/plant and catchment areas to identify defects and potential problems 3.3. Adjust equipment to approved operating parameters to optimise and maintain efficient precipitation and to meet product quality targets 3.4. Add reagents to approved operating parameters 3.5. Carry out minor maintenance to maintain condition of equipment

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	3.6. Complete all required documentation clearly, concisely and on time 3.7. Pass on end of shift information to oncoming shift
4. Conduct housekeeping activities	4.1. ***Clean plant*** to maintain condition of all equipment to ensure safe and efficient operations 4.2. Manage and report hazards to maintain a safe working environment
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown or isolates equipment based on process and safety requirements 5.2. Perform ***post shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct precipitation operations:

- apply legislative, organisation and site requirements and procedures for conducting precipitation operations
- end-point identification
- diagnose faults
- identify and address hazards
- handle hazardous goods
- interpret reports
- lift (manual, cranes and loads)
- maintain records
- report defects
- apply safe work practices
- use relevant hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct precipitation operations:

- breakdown procedures
- contaminant identification
- precipitation process
- chemistry - basic solubility
- sulphide precipitation
- neutralisation precipitation
- liquid and solid separation processes in precipitation and crystallisation
- flocculation agents
- filtration methods
- emergency procedures
- environmental procedures
- equipment limitations and operating parameters
- equipment safety requirements
- hazardous goods procedures and consequences of spills and hazardous goods
- identifying repair requirements

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- isolation procedures
- metallurgical and technical data (basic)
- OHS procedures
- operational procedures and checks
- pumping system and flow charts (pipeline and sprinkler systems)
- reagent types
  - seeding and crystallisation processes
  - sampling
  - site procedures
  - site safety requirements
  - types of ores (basic)
  - wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting precipitation operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of precipitation operations • working with others to undertake and complete the precipitation operations that meets all of the required outcomes • consistent timely completion of precipitation operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the precipitation operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• compressors • distribution control systems (DCS) • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools hoses
Pre-start checks may include:	• availability of equipment (e.g. conveyor) • detection of conditions that are unusual • personnel availability • job requirements • levels • walk through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal

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	• water quality
Plant may include:	• precipitators • liquor stream seeding equipment • thickeners • clarifiers • sand filters • heat exchanger • vessels • conveyors • valves • conglomerators • agitators • ejectors
Start-up procedures may include:	• agitators • cameras and monitors • interlocks • distribution control system • hydraulic system • pumping system • screen inspections • scuttling pumps • pipes and flanges • drive belts • valves • visual and audio warning devices and lights • suppression systems
Indicator readings may measure:	• degree of separation • flow • current (e.g. agitators) • density • levels • restrictions • air flows • pressure • speed (e.g. pumps) • temperature • unusual noises • vibrations • power • temperature
Precipitation can cover sulphide	

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and neutralisation processes, and a seed recycle, crystal growth process to precipitate metals or other items in solution.	
Monitoring and control of the precipitation or crystallisation process may include the checking of:	• blockages and spillages • feed rates • mineral content • moisture levels • on stream analysis (OSA) • overloads • pressures • power draw • wear and tear • emission (e.g. cyanide) • laboratory results • levels • residual content in liquor stream • productivity of extraction
Equipment and plant cleaning methods may include:	• hosing with water • high pressure cleaning
Post-shutdown checks are like pre-start checks.	
Materials are wet and may include:	• slurry • effluent

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBE204A Conduct reduction process

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of reduction processes in the metalliferous mining industry. It includes planning and preparing for reduction operations, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for reduction operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of auxiliary equipment for work activities 1.6. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel and ***plant*** 1.10. Use approved dust suppression and extraction methods
2. Start up equipment in sequence	2.1. Carry out ***start up procedures*** and completes start up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine reduction efficiency 3.2. Continuously inspect and ***monitor*** operations/plant and catchment areas to identify reduction process defects and potential problems 3.3. Adjust equipment to approved operating parameters to optimise ***reduction***, maintain efficient reduction and to meet product quality targets 3.4. Add reagents to approved operating parameters 3.5. Carry out minor maintenance to maintain condition of equipment 3.6. Complete all required documentation

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	clearly, concisely and on time 3.7. Pass on end of shift information to oncoming shift
4. Conduct housekeeping activities	4.1. ***Clean plant*** to maintain condition of all equipment to ensure safe and efficient operations 4.2. Address and report hazards to maintain a safe working environment
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown or isolate equipment based on process and safety requirements 5.2. Perform ***post shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct reduction processes:

- apply legislative, organisation and site requirements and procedures for conducting reduction processes
- diagnose faults
- identify and address hazards
- handle hazardous goods
- interpret reports
- lift (manual, cranes and loads)
- maintain records
- report defects
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct reduction processes:

- breakdown procedures
- contaminant identification
- reduction process (basic)
- emergency procedures
- environmental procedures
- equipment limitations and operating parameters
- equipment safety requirements
- hazardous goods procedures and consequences of spills and hazardous goods
- identifying repair requirements
- isolation procedures
- metallurgical and technical data (basic)
- OHS procedures
- operational procedures and checks
- pumping system and flow charts (pipeline and sprinkler systems)
- reagent types
- sampling

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- site procedures
- site safety requirements
- types of ores (basic)
- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting reduction processes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of reduction processes • working with others to undertake and complete the reduction processes in a way that meets all of the required outcomes • consistent timely completion of reduction processes that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the reduction processes

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• compressors • distribution control systems (DCS) • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses (air and water)
Pre-start checks may include:	• availability of equipment (e.g. conveyor) • detection of conditions that are unusual • personnel availability • job requirements • levels • walk through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal

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	• water quality
Plant may include:	• rotary kilns • fans • hoppers • pumps • vessels • lines • screens • blowers • weigh feeder • auxiliary drives • conveyors • valves
Start up procedures may include:	• cameras and monitors • conveyors • fans • interlocks • distribution control system • launders • hoppers • screen inspections • scuttling pumps • pipes and flanges • drive belts • valves • visual and audio warning devices and lights • suppression systems
Monitoring the reduction process may include:	• blockages and spillages • feed rates • mineral content • moisture levels • on stream analysis (OSA) • overloads • pressures • power draw • wear and tear • emission (e.g. cyanide) • levels
Indicator readings may measure:	• speed • current • assaying

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	• density • carbon levels • restrictions • air volume and pressure • speed (e.g. pumps) • unusual noises • vibrations • power • temperature • feed rates (rpm, amps) • magnetic content
Reduction methods may include:	• open hearth furnace • rotary kiln • multi-hearth • blast furnace
Equipment and plant cleaning methods may include:	• hosing with water • high pressure cleaning
Post-shutdown checks are like pre-start checks.	
Materials may include:	• ilminite • coal car • sulphur • reagents
Contaminants are anything other than the ore. Common contaminants may include:	• oil • fuel • gases • organic materials • moisture

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIPBE205B Conduct roasting operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of roasting operations in the metalliferous mining industry. It includes preparing for and conducting roaster operations, managing delivery of concentrate to the fluid bed roaster, monitoring operation of the fluid bed roaster, managing roaster products, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for and conduct roaster operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Identify, address and report potential risks and hazards 1.7. Identify, address and report ***environmental issues*** 1.8. Adhere to emergency procedures to ensure safety of personnel and ***plant*** 1.9. Use approved dust suppression and extraction methods 1.10. Ensure area is well ventilated before entry into work area
2. Manage delivery of concentrate to fluid bed roaster	2.1. ***Monitor feed*** mechanism operation (e.g. conveyor systems) 2.2. Monitor operating requirements 2.3. Adjust feed rate in accordance with operating requirements
3. Monitor operation of fluid bed roaster	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine roaster efficiency 3.2. Continuously inspect operations/plant and catchment areas to identify ***roaster process*** defects and potential problems 3.3. Adjust cooling systems to optimise roaster operation temperature 3.4. Complete all required documentation clearly, concisely and on time 3.5. Pass on end of shift information to oncoming shift
4. Manage roaster products	4.1. Monitor gas by-product output and cooling 4.2. Monitor calcine cooling systems 4.3. Regulate the operation of calcine and gas

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	cooling systems 4.4. Action and report all roaster operating and cooling system alarms 4.5. Communicate with personnel to ensure effective management of roaster products and by-products

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct roasting operations:

- apply legislative, organisation and site requirements and procedures for conducting roasting operations
- diagnose faults
- handle hazardous goods
- interpret reports
- lift (manual, cranes and loads)
- maintain records
- report defects
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct roasting operations:

- breakdown procedures
- contaminant identification
- roasting process
- operating parameters and roasting capacities
- cooling systems
- boiler operation
- concentrate blending
- calcine storage
- gas management systems
- emergency procedures
- environmental procedures
- equipment safety requirements
- hazardous goods procedures and consequences of spills and hazardous goods
- identifying repair requirements
- isolation procedures
- metallurgical and technical data (basic)
- OHS procedures

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- pumping system
- reagent types
- sampling
- site procedures
- site safety requirements
- types of ores (basic)
- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting roasting operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of roasting operations • working with others to undertake and complete the roasting operations in a way that meets all of the required outcomes • consistent timely completion of roasting operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the roasting operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures examples of legislation include: • mining safety and health • mine inspection • OHS • explosives • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• compressors • distribution control systems (DCS) • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
Plant may include:	• roaster • boilers • cyclones • drum coolers

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	• gas precipitators • heat exchanger • burners • gas train • vessels • conveyors • valves • ladders • rails
Monitoring the roasting process may include the checking of:	• product composition (e.g. sulphate/sulphide %)blockages and spillages • feed rates • moisture levels • overloads • pressures • power draw • wear and tear • emission (e.g. sulphides) • Contaminants, that is, anything other than the ore. Common contaminants may include oil, fuel, gases, organic materials, moisture
Indicator readings may measure:	• temperature • gas pressure • air flows • speed (e.g. cooling system pumps) • unusual noises • vibrations • power
Equipment or plant cleaning methods may include:	• hammer and bar • air lance • shovel and wheel barrow • vacuum • hosing with water • high pressure cleaning
Roasting process may include:	• fluid bed roaster • tantaline roaster • filtrate roasting
Feed materials may include:	• ore concentrate • calcine • other feed material

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Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBE301A Conduct calcinations activities

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of calcinations activities in the metalliferous mining industry. It includes planning and preparing for calcinations operations, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for calcination operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel and ***plant*** 1.10. Use approved dust suppression and extraction methods 1.11. Ensure area is well ventilated before entry
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and completes start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine calcination efficiency 3.2. Continuously inspect and ***monitor*** operations/plant and catchment areas to identify process defects and potential problems 3.3. Adjust equipment to approved operating parameters to optimise and maintain efficient ***calcining*** and to meet product quality targets 3.4. Add reagents to approved operating parameters

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	3.5. Carry out minor maintenance to maintain condition of equipment 3.6. Complete all required documentation clearly, concisely and on time 3.7. Pass on end of shift information to oncoming shift
4. Conduct housekeeping activities	4.1. ***Clean plant*** to maintain condition of all equipment to ensure safe and efficient operations 4.2. Manage and report hazards to maintain a safe working environment
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown or isolates equipment based on process and safety requirements 5.2. Perform ***post shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct calcinations activities:

- apply legislative, organisation and site requirements and procedures for conducting calcinations activities
- diagnose problems
- handle hazardous goods
- interpret reports
- lift (manual, cranes and loads)
- maintain records
- monitor operations
- report defects
- use safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct calcinations activities:

- breakdown procedures
- contaminant identification
- calcining process
- emergency procedures
- environmental procedures
- equipment limitations and operating parameters
- equipment safety requirements
- hazardous goods procedures and consequences of spills and hazardous goods
- identifying repair requirements
- isolation procedures
- metallurgical and technical data (basic)
- OHS procedures related to calcination operations
- operational procedures and checks
- pumping system and flow charts (pipeline and sprinkler systems)
- reagent types
- sampling

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- site procedures
- types of ores
- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting calcinations activities • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of calcinations activities • working with others to undertake and complete the calcinations activities in a way that meets all of the required outcomes • consistent timely completion of calcinations activities that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the calcinations activities

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure and may include:	• conveyors • compressors • distribution control systems (DCS) • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses
Pre-start checks may include:	• availability of equipment (e.g. conveyor) • detection of conditions that are unusual • personnel availability • job requirements • levels • walk through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off

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	• spills • waste management and disposal • water quality
Plant may include:	• air blowers • bag filters • calciner • electrostatic precipitator • silos • heat exchangers • weigh feeder • lines • gas train • vessels • conveyors • valves
Start-up procedures may include the inspection of:	• agitators • cameras and monitors • interlocks • distribution control system • launders • hydraulic system • pumping system • screen inspections • scuttling pumps • pipes and flanges • drive belts • valves • visual and audio warning devices and lights • suppression systems
Indicator readings may measure:	• density • levels • restrictions • air flows • levels • oxygen • pressure • speed (e.g. pumps) • unusual noises • vibrations • power • temperature

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Monitoring the calcining process may include the checking of:	• blockages and spillages • feed rates • mineral content • moisture levels • in stream analysis (ISA)/on stream analysis (OSA) • overloads • pressures • power draw • wear and tear • levels (sodium) • particle size
Calcining methods may include:	• coke bedding • fluid bed • rotary kilns
Equipment and plant cleaning methods may include:	• hosing with water • high pressure cleaning
Post-shutdown checks are like pre-start checks.	
Methods to optimise the plant may include:	• quantity of reagents • oxygen levels
Materials are wet and may include:	• hydrate (feed) • filter cake • gases (natural) • oil • air • coke
Contaminants are anything other than the ore. Common contaminants may include:	• oil • fuel • gases • organic materials • moisture

Unit Sector(s)

Beneficiation

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBE302A Conduct bacterial oxidation

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of bacterial oxidation in the metalliferous mining industry. It includes planning and preparing for bacterial oxidation process, starting up equipment in sequence, operating and monitoring sequence, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for bacterial oxidation process	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interprets and clarifies shift changeover details 1.3. Communicate with other personnel using approved communication method 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform ***equipment pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel and ***plant***
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine ***bacterial oxidation*** progress 3.2. Continuously inspect and ***monitor*** plant and identify bacterial oxidation process defects and potential problems 3.3. Assess sulphuric content of ore according to bacterial oxidation parameters 3.4. Make appropriate adjustments to oxidation process to ***optimise*** targets 3.5. Adjust equipment to approved operating parameters to optimise oxidation performance, maintain efficient oxidation and to meet product quality targets 3.6. Control feed to oxidation equipment 3.7. Add required nutrients and oxygen to approved operating parameters 3.8. Carry out minor maintenance to maintain

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	condition of equipment 3.9. Complete all required documentation clearly, concisely and on time 3.10. Pass on end of shift information to oncoming shift
4. Conduct housekeeping activities	4.1. ***Clean plant*** to maintain condition of all equipment to ensure safe and efficient operations 4.2. Manage and report hazards to maintain a safe working environment
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown or isolate equipment based on process and safety requirements 5.2. Perform ***post shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct bacterial oxidation:

- apply legislative, organisation and site requirements and procedures for conducting bacterial oxidation
- handle hazardous goods
- Identify and manage hazards
- apply lifting techniques (manual, automated)
- maintain records
- monitor operations
- report defects
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct bacterial oxidation:

- bacteria inhibitors
- bacterial oxidation plant (basic) and process
- break down procedures
- contaminants
- depressant identification and activator principles
- emergency procedures
- environmental procedures
- equipment processes, limitations and operating parameters
- equipment safety requirements
- hazardous good procedures and consequences of spills
- identifying repair requirements
- isolation procedures
- metallurgical and technical data
- nutrient types and how to use then
- OHS procedures
- operational procedures and checks
- site procedures

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- types of ores and grades (basic)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting bacterial oxidation • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of bacterial oxidation • working with others to undertake and complete the bacterial oxidation in a way that meets all of the required outcomes • consistent timely completion of bacterial oxidation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate:
	  • working with others to undertake and complete the bacterial oxidation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• forklift • gantry cranes and attachments • hand and power tools • hoses for water and air • loader and bobcat • pump systems
Equipment pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • fluid levels • job requirements • personnel availability • work through plant
Environmental issues may include:	• drainage • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality

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Plant may include:	• acid pumping system • acid storage tank • agitators and gearboxes • air ducting and air sparge pipes • bacterial oxidation / leaching tanks • conditioning tanks • cooling water pipelines • counter current decantation thickeners • flocculent mixing/storage/pumping system • lime mixing/storage/pumping system • limestone ball mill • limestone storage and pumping system • neutralisation circuit tanks • nutrient hold tanks • nutrient mixing tanks • nutrient pumping systems • pumps • slurry pipelines
Start-up procedures may include:	• cameras and monitors • distribution control system (DCS) • interlocks • isolations • pipes and flanges • pumping system • valves • visual and audio warning devices and lights • water systems
Indicator readings may measure:	• air flows • concentrations (e.g. dissolved oxygen) • conductivity • current • densities • heat - temperature • levels • mass flow • pH • power • pressure • reagent flows • speed • vibrations

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Bacterial oxidation methods may include:	• high temperature bacterial leaching • low temperature bacterial leaching
Monitoring may include the checking of:	• air flows • air pressure • bacteria concentration • blockages and spillages • cooling water flows • densities • dissolved oxygen • feed rates • in stream analysis (ISA) • nutrient levels • on stream analysis (OSA) • overloads • pH • power draw • pressures • reagent flow • temperatures • wear and tear
The methods used to **optimise** the plant may include adjustment to:	• air flow • mass flow • nutrient levels • pH • solids densities
Post-shutdown checks are like pre-start checks.	
Site conditions may include:	• weather conditions • working at heights

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIPBE303B Conduct filtering process

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of filtering processes in the mining industry. It includes planning and preparing for the filtering process, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining
- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for filtering process	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures 1.10. Use dust suppression and extraction methods 1.11. Ensure area is well ventilated
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configuration and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** 3.2. Continuously inspect plant and identify defects and potential problems 3.3. Adjust equipment to approved operating parameters 3.4. Control feed to equipment 3.5. ***Monitor*** moisture in cake and density of filtrate 3.6. Monitor reagent addition for cleaning 3.7. Monitor and maintain air systems 3.8. Maintain cleanliness of filtration systems 3.9. Complete all required documentation 3.10. Pass on end of shift information to oncoming shift
4. Conduct housekeeping	4.1. ***Clean plant***

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activities	4.2. Identify, address and reports hazards
5. Shutdown in sequence and/or isolate equipment	5.1. Clear build-up from ***filtering*** circuit before commencing shutdown 5.2. Shutdown or isolate equipment based on process and safety requirements 5.3. Perform ***post-shutdown*** or isolation checks 5.4. Pass on shift changeover details to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct filtering processes:

- apply legislative, organisation and site requirements and procedures
- apply lifting techniques (manual, cranes and loads)
- monitor operations
- report defects
- use safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct filtering processes:

- air systems
- contaminant identification
- emergency procedures
- environmental principles
- equipment operating parameters
- equipment safety requirements
- filtering procedures
- hazardous substance procedures and consequences of spills
- identifying repair requirements
- isolation principles
- metallurgical and technical data
- operational procedures and checks
- site procedures
- filtering safety requirements
- types of product (slurry etc)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting filtering processes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of filtering processes • working with others to undertake and complete the filtering processes in a way that meets all of the required outcomes • consistent timely completion of filtering processes that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the filtering processes

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure and may include:	• belt weighs • compressors • distribution control systems • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses (water and air) • pump systems • conveyors
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • fluid levels • job requirements/personnel availability • walk through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling

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	• run-off • spills • waste management and disposal • water quality
Start-up procedures may include:	• air systems • cameras and monitors • checking interlocks • checks distribution control system (DCS) • chutes • display instruments, lights and gauges • equipment stop engine lights • filters/hydraulic system • isolations • lighting • suppression systems • valves • visual and audio warning devices and lights
Equipment indicator readings may include:	• current • flow • levels • pressure/speed • unusual noises/vibrations
Monitoring may include the checking of:	• air systems • blockages and spillages • feed rates • filters • in stream analysis (ISA) • levels of ponds and catchment areas • mineral content • on stream analysis (OSA) • overloads • particle size indicators (PSI) • power draw • pressures/temperatures • wear and tear
Equipment and plant cleaning methods may include:	• degreasing • forced air • hosing with water • suction
Filtering methods may include:	• candle • drum

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	• pressure • compression • leaf
Post-shutdown checks are like pre-start checks	
Contaminants are anything other than the ore. Common contaminants may include:	• oils • plastic • solvents

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBE304B Conduct heavy media separation

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of heavy media separation in the mining industry. It includes planning and preparing for heavy media separation, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining
- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for heavy media separation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment **pre-start checks** 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configurations and system requirements 2.2. Confirm ***plant*** is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** 3.2. Continuously inspect plant 3.3. Adjust equipment to optimise separation performance and product quality 3.4. Control feed to plant 3.5. ***Monitor*** and adjust ***heavy media*** levels 3.6. Monitor and adjust levels of separating baths 3.7. Monitor the efficiency of the heavy media separation process 3.8. Carry out operator level maintenance 3.9. Complete all required documentation 3.10. Pass on end of shift information to oncoming shift or next shift
4. Conduct housekeeping activities	4.1. Clean plant 4.2. Identify, address and report hazards
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown and/or isolate equipment based on process and safety requirements

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	5.2. Perform ***post-shutdown*** and/or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct heavy media separation:

- apply legislative, organisation and site requirements and procedures
- handle hazardous substances/identify hazards
- use lifting techniques (manual, automated)
- maintain records
- monitor operations
- report defects
- employ safe work practices
- use hand and power tools
- find plant faults

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct heavy media separation:

- break down procedures
- contaminants
- emergency procedures
- environmental principles
- equipment operating parameters
- equipment safety requirements
- gravitation separation process (fines and heavy)
- hazardous substance procedures and consequences of spills
- heavy media types
- high pressure hazards
- isolation procedures
- metallurgical and technical data
- operational procedures and checks
- heavy media separation safety requirements
- site procedures
- types of ores and grades density

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting heavy media separation • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of heavy media separation • working with others to undertake and complete the heavy media separation in a way that meets all of the required outcomes • consistent timely completion of heavy media separation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate:
	  • working with others to undertake and complete the heavy media separation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• gantry cranes and attachments • hand and power tools • pump systems
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • fluid levels • job requirements • personnel availability • work through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
Start-up procedures may include	• cameras and monitors

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the inspection of:	• distribution control system (DCS) • interlocks • isolations • pipes and flanges • pumping system • valves • visual and audio warning devices and lights • water systems
Plant may include:	• heavy media circuit • separating baths • cyclones • screens (drawing, washing, separating)
Indicator readings may measure:	• concentrations • densities • levels • pressure flows • viscosity
Monitoring may include:	• air flows • blockages and spillages • feed rates • power • pressures • temperatures • wear and tear • pressure oxidation
Heavy media may include:	• magnetite • ferrosilicon
Post-shutdown checks are like pre-start checks	
The methods used to optimise the plant may include:	• adjustment to heavy media levels • pulp density • stability of slurry • viscosity
Materials may include:	• heavy media • slurry • waste • gangue minerals
Contaminants are anything other than the slurry and nutrients. Common contaminants may	• oil • plastic • wood fibre

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include:	
Site conditions may include:	• weather conditions • working at heights

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBE305A Conduct high tension separation

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of high tension separation in the metalliferous mining industry. It includes planning and preparing for electrostatic separation, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, shutting sown in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for electrostatic separation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of auxiliary equipment for work activities 1.6. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel and plant 1.10. Use approved dust suppression and extraction methods 1.11. Ensure area is well ventilated before entry into work area
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine ***separation*** efficiency 3.2. Continuously inspect and ***monitor*** plant and identify defects and potential problems 3.3. Assess mineral content of ore according to separation parameters 3.4. Make appropriate adjustments to separation process to optimise targets 3.5. Adjust equipment to approved parameters to optimise separation performance, maintain efficient separation and to meet product quality targets 3.6. Control feed to separation equipment

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	3.7. Carry out minor maintenance to maintain condition of equipment 3.8. Complete all required documentation clearly, concisely, and on time 3.9. Pass on end of shift information to oncoming shift
4. Conduct housekeeping activities	4.1. ***Clean plant*** to maintain condition of all ***equipment*** to ensure safe and efficient operations 4.2. Manage and report hazards to maintain a safe working environment
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown or isolates equipment based on process and safety requirements 5.2. Perform ***post shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct high tension separation:

- apply legislative, organisation and site requirements and procedures for conducting high tension separation
- handle hazardous goods
- interpret reports
- apply lifting techniques (manual, cranes and loads)
- report defects
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct high tension separation:

- breakdown procedures
- contaminants
- emergency procedures/environmental procedures
- equipment processes, limitations and operating parameters
- equipment safety requirements
- separation plant (basic)
- hazardous goods procedures and consequences of spills
- identifying repair requirements
- isolation procedures
- metallurgical and technical data
- OHS procedures
- operational procedures and checks
- site procedures
- site safety requirements
- types of ores and grades (basic)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting high tension separation • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of high tension separation • working with others to undertake and complete the high tension separation in a way that meets all of the required outcomes • consistent timely completion of high tension separation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the high tension separation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • personnel availability • walk through plant • isolation and/or lockout checks • job requirements
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
Start-up procedure may include:	• cameras and monitors • distribution systems • drive belts • screens • fluid levels (grease, oil)

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	• hoppers and launders • interlocks • isolations • pipes and flanges • conveyor systems • elevators and screw feeders • valves • visual and audio warning devices
Indicator readings may measure:	• current • grade • heat • unusual noises • levels • radiation
Separation methods may include:	• high tension • sizing
Separation quality targets may include:	• grades • consumption targets • percentage of recovery
Monitoring may include:	• air flows • blockages and spillages • current draw • feed rates • power • pressures • wear and tear • temperatures • particle size • throughput
Equipment and plant cleaning methods may include:	• shovels • compressed air
Equipment may include:	• gantry cranes and attachments • hand and power tools • hoses (air)
Plant may include:	• compressors and blowers • vibrating screens • electrostatic rolls and plates • dry stream analyser • weightometers • dryers and burners

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	• conveyors, screw feeders and elevators
Post shutdown checks are like pre-start checks.	
Methods used to optimise the plant may include:	• adjust mineral cuts • adjust feed input rate • adjust temperatures • adjust high tension settings
Materials may include:	• gas • oil
Contaminants are anything other than the slurry. Common contaminants may include:	• wood fibre • gravel • silica
Site conditions may include:	• day and night • weather conditions • working at heights

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBE306A Conduct leaching process

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of leaching processes in the metalliferous mining industry. It includes planning and preparing for leaching circuit operations, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for leaching circuit operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures 1.10. Use approved dust suppression and extraction methods 1.11. Ensure area is well ventilated
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and completes start-up checks according to plant configurations and system requirements 2.2. Confirm ***plant*** is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine ***leaching*** efficiency 3.2. Continuously inspect and ***monitor*** operations/plant and containment areas 3.3. Adjust equipment to optimise leaching 3.4. Add reagents to achieve operating parameters 3.5. Adjust flows to meet down stream requirements 3.6. Carry out operator level maintenance to maintain condition of equipment 3.7. Complete all required documentation 3.8. Pass on end of shift information to oncoming shift
4. Conduct housekeeping	4.1. ***Clean plant***

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activities	4.2. Identify, address and report hazards
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown and/or isolates equipment based on process and safety requirements 5.2. Perform ***post shutdown*** and/or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct leaching processes:

- apply legislative, organisation and site requirements and procedures for conducting leaching processes
- employ safe work practices
- fault finding
- handle hazardous substances
- identify hazards
- interpret reports
- maintain records
- monitor operations/report defects
- use hand and power tools
- use lifting techniques (manual, cranes and loads)

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct leaching processes:

- contaminant identification
- emergency procedures
- environmental principles
- equipment operating parameters
- equipment safety requirements
- hazardous substances procedures and consequences of spills
- isolation procedures
- leaching principles
- metallurgical and technical data
- operational procedures and checks
- pumping system and flow charts
- reagent types
- sampling
- leaching safety requirements
- types of ores

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting leaching processes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the leaching process • working with others to undertake and complete the leaching process in a way that meets all of the required outcomes • consistent timely completion of the leaching process that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the leaching process

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevantcompliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• compressors • distribution control systems (DCS) • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses (water and air)
Pre-start checks may include:	• availability of equipment (e.g. conveyor) • detection of conditions that are unusual • fluid levels • job requirements • personnel availability • walk through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills

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	• waste management and disposal • water quality
Start-up procedures may include:	• agitators • cameras and monitors • distribution control system • drive belts • hydraulic system • interlocks • launders • pipes and flanges • pumping system • screen inspections • scuttling pumps • suppression systems • valves • visual and audio warning devices and lights
Plant may include:	• agitators • airlines • conveyors • filters • grinding mills • heat exchangers • lines • overhead sprinklers • piping • pumps • reactors • streamlines • sumps/tanks • thickeners and clarifiers
The methods used to optimise the plant may include:	• oxygen levels • quantity of reagents
Indicator readings may include:	• air flows • current (e.g. agitators) • density • flow • levels • power • pressure • restrictions • speed (e.g. pumps)

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	• unusual noises • vibrations
Leaching methods may include:	• acid • alkaline • bacterial leach • dump (run of mine ore) • heap (processed ore for leaching) • *in situ* • pressure
Monitoring may include the checking of:	• blockages and spillages • carbon levels and movement • feed rates • gas emission (e.g. cyanide) • in stream analysis (ISA) • mineral content • on stream analysis (OSA) • overloads • particle size indicators (PSI) • power draw • pressures • titrations • wear and tear
Equipment and plant cleaning methods may include:	• high pressure cleaning • hosing with water
Post-shutdown checks are like pre-start checks.	
Wet materials may include:	• agglomerated • crushed • slurry
Dry materials may include:	• calcine (dry prior to adding) • liquors (e.g. spent from electrolysis)
Contaminants are anything other than the ore. Common contaminants may include:	• chemicals • containers and packaging • fuels • metal • oils • plastic • timber

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Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBE307A Conduct pressure oxidation

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit covers the conduct of pressure oxidation in the metalliferous mining industry. It includes planning and preparing for the pressure oxidation process, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

Application of the unit	This unit is appropriate for those working in an operational role at worksites within: • Metalliferous mining

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for pressure oxidation process	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel and ***plant***
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine oxidation progress 3.2. Continuously inspect and ***monitor*** plant to identify oxidation defects and potential problems and take appropriate action 3.3. Adjust equipment to ***optimise*** oxidation performance and product quality 3.4. Control feed to oxidation equipment 3.5. Add oxygen to approved operating parameters 3.6. Carry out minor maintenance to maintain condition of the equipment 3.7. Complete all required documentation clearly, concisely and on time 3.8. Pass on end of shift information to oncoming shift
4. Conduct housekeeping activities	4.1. Clean plant to maintain condition of all equipment to ensure safe and efficient operations 4.2. Manage and report hazards to maintain a safe working environment
5. Shutdown in sequence and/or	5.1. Shutdown or isolate equipment based on process and safety requirements

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ELEMENT	PERFORMANCE CRITERIA
isolate equipment	5.2. Perform ***post shutdown*** or isolation checks

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct pressure oxidation:

- apply legislative, organisation and site requirements and procedures for conducting pressure oxidation
- handle hazardous goods
- identify and manage hazards
- apply lifting techniques (manual, automated)
- maintain records
- report defects
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct pressure oxidation:

- break-down procedures
- contaminants
- depressant identification and activator principles
- emergency procedures
- environmental procedures
- equipment processes, limitations and operating parameters
- equipment safety requirements
- hazardous good procedures and consequences of spills
- high pressures dangers and characteristics
- identifying repair requirements
- isolation procedures
- metallurgical and technical data
- OHS procedures
- operational procedures and checks
- pressure oxidation plant (basic) and process
- site procedures

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REQUIRED SKILLS AND KNOWLEDGE
• types of ores and grades (basic)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conduct pressure oxidation • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of pressure oxidation • working with others to undertake and complete the pressure oxidation in a way that that meets all of the required outcomes • consistent timely completion of pressure oxidation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the pressure oxidation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• gantry cranes and attachments • hand and power tools • pump systems
Pre-checks may include:	• availability of equipment • detection of conditions that are unusual • fluid levels • job requirements • personnel availability • work through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality

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Plant may include:	• conditioning tanks and columns • oxygen tanks
Start-up procedures may include of:	• cameras and monitors • distribution control system (DCS) • interlocks • isolations • pipes and flanges • pumping system • valves • visual and audio warning devices and lights • water systems
Indicator readings may measure:	• concentrations • densities • heat • levels • pressure flows
Monitoring may include the checking of:	• air flows • blockages and spillage's • feed rates • power • pressures • temperatures • wear and tear
The methods used to **optimise** the plant may include:	• adjustment to oxygen levels
Post-shutdown checks are like pre-start checks.	

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIPBE308B Conduct thickening and clarifying process

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of thickening and clarifying processes in the mining industry. It includes planning and preparing for thickening and clarifying processes, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining
- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for thickening and clarifying process	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** to ensure ***equipment*** is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures 1.10. Use dust suppression and extraction methods 1.11. Ensure area is well ventilated
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine torque, bed characteristics, flow characteristics and reagent dosage 3.2. Continuously inspect ***plant*** 3.3. Control discharge of underflow/overflow agents to agreed operating parameters 3.4. Direct underflow/overflow to alternate location according to work specifications 3.5. Monitor performance of thickener to meet agreed operating parameters 3.6. Complete all required documentation 3.7. Pass on shift changeover details to oncoming shift
4. Conduct housekeeping activities	4.1. ***Clean plant*** 4.2. Identify, address and report hazards to

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	maintain a safe working environment
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown and/or isolate equipment based on process and safety requirements 5.2. Perform ***post-shutdown*** and/or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct thickening and clarifying processes:

- apply legislative, organisation and site requirements and procedures
- handle hazardous substances
- identify hazards
- interpret reports
- use lifting techniques (manual, cranes and loads)
- report defects
- employ safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct thickening and clarifying processes:

- contaminant identification and treatment
- depressant principles
- emergency procedures
- environmental principles
- equipment limitations and operating parameters
- equipment safety requirements
- hazardous substance procedures and consequences of spills
- identifying repair requirements
- isolation procedures
- metallurgical and technical data
- operational procedures and checks
- reagent types
- thickener/clarifier safety requirements
- types of ores

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting thickening and clarifying processes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of thickening and clarifying processes • working with others to undertake and complete the thickening and clarifying processes in a way that meets all of the required outcomes • consistent timely completion of thickening and clarifying processes that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the thickening and clarifying process

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• air spears • hand and power tools • hydraulic units (e.g. porta-paks) • pump systems
Pre-start checks may include:	• availability of equipment (e.g. conveyor) • detection of conditions that are unusual • fluid levels • job requirements • personnel availability • walk through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality

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Start-up procedures may include:	• auxiliary check equipment • establish relevant communications • plant checks • safety mechanisms • shift changeover details
Indicator readings may include:	• concentrations • current • densities • flow • levels • power • pressure • size • speed • temperature • unusual noises • vibrations • weight • overflow clarity • bed levels • reagent additions • flow recycles
Plant may include:	• compressors • distribution control systems (DCS) • feeders • froth beams and sprays • gantry cranes • hoses (water and air) • lubrication • racks • radiation gauges • spray systems
Equipment and plant cleaning methods may include:	• (plant cleaning normally occurs during shutdown) • degreasing • forced air • hosing with water • high pressure cleaning • suction
Post-shutdown checks are like pre-start checks	

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Materials may include:	• reagents • slurry
Reagents may include:	• depressant (e.g. flocculent)
Contaminants are anything other than the ore. Common contaminants may include:	• plastic • oil

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBE309B Conduct wet gravity separation

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of wet gravity separation in the mining industry. It includes planning and preparing for wet gravity separation, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining
- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for wet gravity separation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of auxiliary equipment for work activities 1.6. Perform ***equipment pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel and ***plant*** 1.10. Use approved dust suppression and extraction methods 1.11. Ensure area is well ventilated before entry into work area
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine ***separation*** efficiency 3.2. Continuously inspect and ***monitor*** plant and identify separation process defects and potential problems 3.3. Assess mineral content of ore according to separation parameters 3.4. Make appropriate adjustments to separation process to optimise targets 3.5. Adjust equipment to approved operating parameters to optimise separation performance, maintain efficient separation and to meet project quality targets

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	3.6. Control feed to separation equipment 3.7. Carry out minor maintenance to maintain condition of equipment 3.8. Complete all required documentation, clearly, concisely and on time 3.9. Pass on end of shift information to oncoming shift
4. Conduct housekeeping activities	4.1. ***Clean plant*** to maintain condition of all equipment to ensure safe and efficient operations 4.2. Address and report hazards to maintain a safe working environment
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown or isolate equipment based on process and safety requirements 5.2. Perform ***post-shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct wet gravity separation:

- apply legislative, organisation and site requirements and procedures
- handle hazardous goods
- identify and address hazards
- interpret reports
- apply lifting techniques (manual, cranes and loads)
- report defects
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct wet gravity separation:

- breakdown procedures
- contaminants
- emergency procedures
- environmental procedures
- equipment processes, limitations and operating parameters
- equipment safety requirements
- separation plant (basic)
- hazardous goods procedures and consequences of spills
- repair requirements identification
- isolation procedures
- metallurgical and technical data
- OHS procedures
- operational procedures and checks
- site procedures
- site safety requirements
- types of ores and grades (basic)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting wet gravity separation • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of wet gravity separation • working with others to undertake and complete the wet gravity separation in a way that meets all of the required outcomes • consistent timely completion of wet gravity separation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the wet gravity separation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Equipment may include:	• gantry cranes and attachments • hand and power tools • hoses (water and air) • pumps systems
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • fluid levels • isolation and/or lockout checks • job requirements • personnel availability • walk through plant
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal

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	• water quality
Plant may include:	• attritioners • compressors and blowers • cyclones • elutriator • pumps • rotating screens/spirals • wet shaker tables
Methods used to optimise the plant may include:	• adjust mineral cuts (table and spirals) • adjust feed input rate
Start-up procedure may include:	• cameras and monitors • distribution systems • drive belts • fluid levels (grease, oil, water) • hoppers and launders • interlocks • isolations • pipes and flanges • pumping systems • screens • valves • visual and audio warning devices • water systems (sprayers and columns)
Indicator readings may measure:	• current • density • levels • pressure flows • unusual noises
Separation methods may include:	• high tension
Separation quality targets may include:	• consumption targets • density • grades • percentage of recovery • pH level
Monitoring may include:	• air flows • blockages and spillages • current draw • feed rates • power • pressures

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	• temperatures • wear and tear
Equipment and plant cleaning methods may include:	• brush scrubbing • hosing with water
Post-shutdown checks are like pre-start checks	
Materials may include:	• air • slurry • water
Contaminants are anything other than the slurry. Common contaminants may include:	• gravel • wood fibre
Site conditions may include:	• day and night • weather conditions • working at heights

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBE310B Conduct flotation process

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of flotation processes in the mining industry. It includes planning and preparing for flotation processes, starting up equipment in sequence, operating and monitoring flotation equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining
- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for flotation process	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and completes start-up checks according to plant configurations and system requirements 2.2. Confirm ***plant*** is operational
3. Operate and monitor flotation equipment	3.1. Read and interpret data from equipment ***indicators*** 3.2. Continuously inspect and ***monitor*** plant and identify ***flotation*** process defects and potential problems 3.3. Assess mineral content of ore according to flotation parameters 3.4. Make appropriate adjustments to flotation process 3.5. Adjust equipment to prescribed operating parameters 3.6. Control feed to flotation equipment 3.7. Add reagents according to operating parameters 3.8. Carry out operator level maintenance 3.9. Complete all required documentation 3.10. Pass on end of shift information to oncoming shift

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4. Conduct housekeeping activities	4.1. ***Clean plant*** 4.2. Identify, address and report hazards
5. Shut down in sequence and/or isolate equipment	5.1. Shut down and/or isolate equipment based on process and safety requirements 5.2. Perform ***post shut down*** and/or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct flotation processes:

- apply legislative, organisation and site requirements and procedures for conducting flotation processes
- handle hazardous substances
- identify hazards
- use lifting techniques (manual, cranes and loads)
- maintain records
- monitor operations
- report defects
- employ safe work practices
- use hand and power tools
- find plant operating faults

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct flotation processes:

- contaminants
- emergency procedures
- environmental principles
- equipment and operating parameters
- equipment safety requirements
- flotation plant
- hazardous substances and consequences of spills
- isolation procedures
- metallurgical and technical data
- operational procedures and checks
- reagent types
- site procedures/flotation safety requirements
- types of ores and grades

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting flotation processes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the flotation process • working with others to undertake and complete the flotation process in a way that meets all of the required outcomes • consistent timely completion of flotation processes that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the flotation process

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• gantry cranes and attachments (e.g. overhead) • hand and power tools • hoses (water and air) • pump systems
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • fluid levels • job requirements • personnel availability • walk through plant
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
Start-up procedures may include	• cameras and monitors

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the inspection of:	• distribution control system (DCS) • drive belts • filters • fluid levels (grease, oil, water) • hoppers and launders • interlocks • isolations • pipes and flanges • pumping system • valves • visual and audio warning devices and lights • water systems (e.g. sprays and columns)
Plant may include:	• compressors and blowers • conditioning tanks • flotation cells and columns • reagent dosing
Indicator readings may measure:	• concentrations • current • densities • grade • heat • levels • pressure flows • unusual noises
Monitoring may include:	• air flows • blockages and spillages • check current draw • feed rates • in stream analysis (ISA) • on stream analysis (OSA) • particle size indicators (PSI) • power • pressures • pulp density • pulp levels • temperatures • wear and tear
Floatation methods may include:	• bulk flotation • controlled potential sulphide (CPS) • pre-float
Floatation quality targets may	• concentrate grade

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include:	• consumption targets • density • Eh (electro chemical potential) • percentage of recovery • pH level
Equipment and plant cleaning methods may include:	• hosing with water
Post-shutdown checks are like pre-start checks.	
The methods used to **optimise the plant** may include:	• adjustment to reagent usage
Materials may be wet and may include:	• air • reagents • slurry
Contaminants are anything other than the slurry and reagents. Common contaminants may include:	• oil • plastic • wood fibre
Site conditions may include:	• day and night • weather conditions • working at heights

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBE311B Conduct magnetic separation

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of magnetic separation in the mining industry. It includes planning and preparing for magnetic separation, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining
- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for magnetic separation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of auxiliary equipment for work activities 1.6. Perform equipment ***pre-start checks*** 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures 1.10. Use approved dust suppression and extraction methods 1.11. Ensure area is well ventilated
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configurations and system requirements 2.2. Confirm ***plant*** is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine ***separation*** efficiency 3.2. Continuously inspect and ***monitor*** plant and identify defects and potential problems 3.3. Assess mineral content of ore according to separation parameters 3.4. Make appropriate adjustments to separation process 3.5. Adjust equipment to agreed parameters 3.6. Control feed to separation equipment 3.7. Carry out operator level maintenance to maintain condition of ***equipment*** 3.8. Complete all required documentation 3.9. Pass on end of shift information to oncoming shift
4. Conduct housekeeping	4.1. ***Clean plant***

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activities	4.2. Identify, address and report hazards
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown and/or isolate equipment based on process and safety requirements 5.2. Perform ***post-shutdown*** and/or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct magnetic separation:

- apply legislative, organisation and site requirements and procedures
- handle hazardous substances
- identify hazards
- interpret reports
- use lifting techniques (manual, cranes and loads)
- monitor operation
- report defects
- employ safe work practices
- use hand and power tools
- find operational faults

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct magnetic separation:

- contaminants
- emergency procedures
- environmental principles
- equipment operating parameters
- equipment safety requirements
- separation plant
- hazardous substance procedures and consequences of spills
- identifying repair requirements
- isolation procedures
- metallurgical and technical data
- operational procedures and checks
- magnetic separation safety requirements
- types of ores and grades

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting magnetic separation • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of magnetic separation • working with others to undertake and complete the magnetic separation in a way that meets all of the required outcomes • consistent timely completion of magnetic separation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the magnetic separation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • personnel availability • walk through plant • isolation and/or lockout checks • job requirements
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
Start-up procedure may include:	• cameras and monitors • distribution systems • drive belts • screens • fluid levels (grease, oil)

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	• hoppers and launders • interlocks • isolations • pipes and flanges • conveyor systems • elevators and screw feeders • valves • visual and audio warning devices
Plant may include:	• compressors and blowers • vibrating screens • induction roll magnets • cross belt magnets • weightometers • dryers and burners • conveyors, screw feeders and elevators
Methods used to optimise the plant may include:	• adjust mineral cuts • adjust feed input rate • adjust temperatures • adjust magnetic intensity
Indicator readings may include:	• current • grade • heat • unusual noises • levels • radiation
Monitoring may include the checking of:	• air flows • blockages and spillages • current draw • feed rates • power • pressures • wear and tear • temperatures • particle size • throughput
Separation methods may include:	• magnetic • sizing
Separation quality targets may include:	• grades • consumption targets • percentage of recovery

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Equipment may include:	• gantry cranes and attachments • hand and power tools • hoses (air)
Equipment and plant cleaning methods may include:	• shovels • compressed air
Post-shutdown checks are like pre-start checks	
Materials may include:	• gas
Contaminants are anything other than the slurry. Common contaminant may include.	• wood fibre • gravel • silica
Site conditions may include:	• day and night • weather conditions • working at heights

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBP202A Conduct air cleaning activities

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of air cleaning activities in the metalliferous mining industry. It includes planning and preparing for air cleaning operations, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for air cleaning operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Communicate with other personnel using approved communication methods 1.5. Select personal protective equipment appropriate for work activities 1.6. Select appropriate type of ***auxiliary equipment*** for work activities 1.7. Perform equipment ***pre-start*** checks to ensure equipment is ready for operation 1.8. Identify, address and report potential risks and hazards 1.9. Identify, address and report ***environmental issues*** 1.10. Adhere to emergency procedures to ensure safety of personnel and plant 1.11. Use approved dust suppression and extraction methods 1.12. Ensure area is well ventilated before entry
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational

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3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** to determine ***air cleaning*** efficiency 3.2. Continuously inspect operations/plant and catchment areas to identify ***air cleaning*** process defects and potential problems 3.3. Adjust equipment to approved ***operating parameters*** to optimise and maintain efficient air cleaning and to meet product quality targets 3.4. Add any required reagents to approved ***operating parameters*** 3.5. Carry out minor maintenance to maintain condition of equipment 3.6. Complete all required documentation clearly, concisely and on time 3.7. Pass on end of shift information to oncoming shift
4. Conduct housekeeping activities	4.1. ***Clean plant*** to maintain condition of all equipment to ensure safe and efficient operations 4.2. Manage and report hazards to maintain a safe working environment
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown or isolate equipment based on process and safety requirements 5.2. Perform post ***shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct air cleaning activities:

- apply legislative, organisation and site requirements and procedures for conducting air cleaning activities
- diagnose faults
- identify and address hazards
- handle hazardous goods
- interpret reports
- lift (manual, cranes and loads)
- maintain records
- report defects
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct air cleaning activities:

- breakdown procedures
- contaminant identification
- air cleaning principles
- air cleaning systems
- emergency procedures
- environmental procedures
- equipment limitations and operating parameters
- equipment safety requirements
- hazardous goods procedures and consequences of spills and hazardous goods
- identifying repair requirements
- isolation procedures
- metallurgical and technical data (basic)
- OHS procedures
- operational procedures and checks
- pumping system and flow charts (pipeline and sprinkler systems)
- sampling

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- site procedures
- site safety requirements
- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting air cleaning activities • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of air cleaning activities • working with others to undertake and complete the conduction of air cleaning activities that meets all of the required outcomes • consistent timely completion of air cleaning activities that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of air cleaning activities

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• compressors • distribution control systems (DCS) • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses
Plant may include:	• filters • cyclones • conveyors • ESP • blowers • valves • pumps • hoppers • hoses • silences • conveyors • weight and vibrating feeder
Air cleaning methods may include:	• scrubbers • bag houses • filters • electrostatic • cyclones • drop out boxes • after burners

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Equipment and plant cleaning methods may include:	• hosing with water • high pressure cleaning
Indicator readings may measure:	• flow • current (e.g. agitators) • density • levels • restrictions • air flows • pressure • speed (e.g. pumps) • unusual noises • vibrations • power • temperature
Monitoring may include:	• blockages and spillages • feed rates • mineral content • moisture levels • on stream analysis (OSA) • overloads • pressures (e.g.in air lines) • power draw • wear and tear • levels • temperature • gas emission levels
Pre-start checks may include:	• availability of equipment (e.g. conveyor) • detection of conditions that are unusual • personnel availability • job requirements • levels • walk through plant • emission levels
Post-shutdown checks are like pre-start checks	
Operating parameters may include:	• pressure differentials
Start-up procedures may include:	• agitators • cameras and monitors • interlocks

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	• distribution control system • launders • hydraulic system • pumping system • screen inspections • scuttling pumps • pipes and flanges • drive belts • valves • visual and audio warning devices and lights • suppression systems
Impurities in the air may include:	• gaseous and particulate
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality

Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIPBP301A Process lime products

Modification History

Not applicable.

Unit Descriptor

This unit covers the processing of lime products in the metalliferous mining industry. It includes planning and preparing for lime production operations, operating crushed limestone feed systems, conducting lime kiln operations, monitoring and controlling the discharge of burnt lime to slaking plant storage, and monitoring and controlling the milk of lime plants. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for lime production operation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify ***shift changeover details*** 1.4. Communicate with other personnel using approved ***communication*** methods 1.5. Select personal protective equipment appropriate for work activities 1.6. Carry out ***routine safety checks*** 1.7. Carry out ***equipment pre-start checks*** 1.8. Identify, address and report ***potential risks and hazards*** 1.9. Identify, address and report ***environmental issues*** 1.10. Adhere to emergency procedures
2. Operate crushed limestone feed systems	2.1. Start-up *feed**systems*** in sequence according to site operating procedures using Distributed Control Systems (DCS) 2.2. Monitor ***feeder plant and equipment*** and identify, address and/or report faults and malfunctions using DCS 2.3. Interpret and respond to ***alarms and indicators*** using DCS 2.4. Monitor and adjust feed rates to meet processing requirements using DCS 2.5. Shutdown ***feeder plant and equipment*** in emergency situations according to site procedures using DCS 2.6. Observe ***safety procedures*** when working around ***feeder plant*** and ***equipment*** 2.7. Perform feeder shutdown procedures and/or isolate ***equipment*** in sequence according to site procedures using DCS
3. Conduct lime kiln operations	3.1. Operate, monitor and adjust ***kiln processing systems and media*** for safe, effective ***kiln*** operation and product quality using DCS 3.2. Monitor performance of burners using DCS and ***adjust and/or replace burner***

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	components 3.3. Operate and adjust discharge tables to meet production requirements 3.4. Monitor and maintain discharged limestone temperature to within specified parameters using DCS 3.5. Observe ***safety procedures*** for entering hot kilns
4. Monitor and control discharge of burnt lime to slaking plant storage	4.1. Monitor and control burnt lime conveyor/flow system for clear flow and delivery of burnt lime using DCS 4.2. Monitor and control the temperature of burnt lime to ensure it does not exceed maximum allowable temperature using DCS 4.3. Interpret and respond to ***alarms and indicators*** 4.4. Monitor and control crushing plant 4.5. Monitor and control input and discharge of silos 4.6. Monitor and control ***dust extraction plant*** and ***equipment*** to maintain a safe atmosphere and minimise product loss 4.7. Observe ***safety procedures*** when working with burnt limestone
5. Monitor and control milk of lime plant	5.1. Monitor and control the process stream through the milk of lime plant 5.2. Interpret and respond to ***alarms and indicators*** 5.3. Control slaking plant operation 5.4. Monitor and adjust milk of lime density to meet specification 5.5. Monitor and control pumping of milk of lime 5.6. Observe ***safety procedures*** when working with ***radiation devices***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to process lime products:

- apply legislative, organisation and site requirements and procedures for processing lime products
- handle dangerous materials
- read and interpret instrumentation
- interpret instructions and reports
- diagnose faults
- lift (manual, cranes and loads)
- maintain records
- apply safe work practices
- use hand and power tools
- work in confined spaces

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to process lime products:

- properties and composition of limestone
- breakdown procedures
- storage methods and capacities
- safety considerations with hot limestone
- dust extraction systems and plant
- feed systems, plant and equipment
- kiln/calcining processes, plant and equipment
- slaking processes, plant and equipment
- equipment limitations and operating parameters
- equipment safety requirements
- emergency procedures
- environmental procedures
- hazardous goods procedures and consequences of spills and hazardous goods
- identifying repair requirements
- isolation procedures
- technical data (basic)
- OHS procedures
- operational procedures and checks

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- quality monitoring and control

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for processing lime products • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of lime product processing • working with others to undertake and complete the processing of lime products that meets all of the required outcomes • consistent timely completion of lime product processing that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the processing of lime products

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Shift changeover details may include:	• shutdowns • clearances/permits • operating instructions for the shift • safety issues • environmental issues
Routine safety checks may include:	• trip hazards • loss control inspections • lighting • signage • emergency safety showers/lights • asbestos
Potential risks and hazards may include:	• heat • noise • burnt lime • conveyors • steam • stock pile • fuel • mobile equipment
Pre-start checks may include:	• detection of conditions that are unusual • personnel availability • job requirements for the shift • walk through plant • interlocks • alarms

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Equipment may include:	• vibratory feeders • conveyors • grizzlies • holding bin • skip hoist • chutes and flaps • kiln • crusher • bucket elevator • silos • bag house (de-dust and dust collection) • rake classifier • tanks, pumps, valves and scale traps
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
Feed systems may include:	• conveyors • tramp metal magnet • undersize grizzly • rill tower and stockpile • distributed Control Systems (DCS)
Feeder plant and equipment may include:	• storage/holding bin • weigh hopper • skip hoist • service hopper and control flaps • DCS
Alarms and indicators may include:	• flow • current (e.g. agitators) • density • levels • restrictions • air flows • pressure

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	• speed (e.g. pumps) • unusual noises • vibrations • power • temperature • radiation levels

Safety procedures may include:	• feeder plant:
	  • electrical checks/inspections on conveyors and all associated equipment
	  • mechanical checks/inspections on conveyors and all associated equipment
	  • checks/inspections control systems
	• manual handling
	• reporting incident/accident/near misses
	• commission/de-commission the system
	• emergency response
	• Hot kilns:
	• electrical checks/inspections on kilns and all associated equipment
	• mechanical checks/inspections on kilns and all associated equipment
	• control system checks/inspections
	• commission/de-commission the system
	• emergency response
	• reporting incidents/accidents near misses
	• Burnt limestone:
	• personal protective equipment.
	• housekeeping
	• routine checks/inspections

Kiln processing systems and media may include:	• combustion air • cooling air • hydraulic systems • cooling oil • fuel • DCS and other control systems as may be used in refineries
Product quality may be compromised by:	• over burnt limestone • under burnt limestone • milk of lime outside of parameters • mechanical equipment breakdown • electrical equipment breakdown • control system fault

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Adjustment or replacement of burner components may include:	• burner tips • burner lances • steam purge • fuel supply • filters • gauges (e.g. flow, pressure)
Dust extraction plant may include:	• de-dust system • bag house • filter bags • pulse air • electronic and mechanical controls

Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPBP302A Control operations in acid plant

Modification History

Not applicable.

Unit Descriptor

This unit covers the controlling of acid plant operations in the metalliferous mining industry. It includes assuming control of acid plant operations from a previous shift, managing acid plant operations, and passing control of the acid plant to the next shift. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a technician role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assume control of acid plant operations from previous shift	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Communicate with other personnel by approved methods 1.3. Receive, interpret and clarify shift changeover information 1.4. Ensure area is well ventilated before entry into work area 1.5. Select personal protective equipment appropriate for work activities 1.6. Perform ***pre-start checks*** to ensure correct equipment operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues***
2. Manage acid plant operations	2.1. ***Monitor*** performance of acid ***plant*** components regularly 2.2. Regulate flow of substrate between process components to maximise production 2.3. Regulate heat exchangers in accordance with operational requirements 2.4. Handle acid ***plant*** products and reagents safely at all times 2.5. *Monitor* and adjust volume of gas through acid ***plant*** 2.6. Regulate gas impurity removal systems 2.7. Regulate by-product disposal in accordance with ***plant*** operating requirements 2.8. ***Monitor*** available acid ***plant*** storage capacity
3. Pass control of acid plant to next shift	3.1. Complete all required documentation for shift handover 3.2. Pass on all shift information to oncoming shift 3.3. Review ***plant*** performance with oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to control acid plant operations:

- apply legislative, organisation and site requirements and procedures
- handle dangerous materials
- read and interpret instrumentation/interpret reports
- diagnose faults
- lift (manual, cranes and loads)
- maintain records
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to control acid plant operations:

- breakdown procedures
- contaminant identification
- sources of acid plant materials
- gas purification process
- drying process
- conversion and absorption
- storage methods and capacities
- emergency procedures
- environmental procedures
- equipment limitations and operating parameters
- equipment safety requirements
- hazardous goods procedures and consequences of spills and hazardous goods
- identifying repair requirements
- isolation procedures
- technical data (basic)
- OHS procedures
- operational procedures and checks
- pumping system
- reagent types

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- sampling
- site procedures/site safety requirements
- types of ores (basic)
- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for controlling acid plant operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of acid plant operations control • working with others to undertake and complete the control of acid plant operations that meets all of the required outcomes • consistent timely completion of acid plant operations control that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the control of acid plant operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Pre-start checks may include:	• detection of conditions that are unusual • personnel availability • job requirements • walk through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off/spills • waste management and disposal • water quality
Monitoring the acid plant process may include:	• gas temperatures • blockages and spillages • feed rates • calcine content • mercury levels/moisture levels • on stream analysis (OSA) • overloads/pressures

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	• power draw • equipment temperature • wear and tear • emission (e.g. sulphide gases) • laboratory results • acid strength • gas analysis
Plant may include:	• heat exchanger • storage facilities • pipelines • electrostatic mist precipitators • gas train • vessels • conveyors • valves • acid heat exchanges • converters • absorbing and drying towers • mercury removal plant

Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPEO201B Conduct conveyor operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of conveyor operations in the coal and metalliferous mining industries. It includes: planning and preparing for conveyor operations, operating conveyors, and carrying out operator maintenance.

Application of the Unit

This unit applies to the movement of material via a conveyor system in the extractive process and is appropriate for those working in operational roles, at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for conveyor operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conduct of conveyor operations 1.2. Obtain, interpret and clarify ***briefings or handover details*** for the allocated task 1.3. Plan job to optimise production requirements 1.4. Perform conveyor ***pre-operational checks*** prior to conveyor operation 1.5. Resolve coordination requirements with others at the site prior to commencing and during work activities 1.6. Identify, address and report ***environmental issues and ground conditions*** 1.7. Identify, address and report ***potential hazards and risks***
2. Operate conveyor	2.1. Adhere to emergency procedures to ensure safety of personnel, plant and equipment 2.2. Activate audio and visual safety ***indicators*** before conveying operation commences 2.3. Coordinate activities with others at site prior to the commencement of and during task activities 2.4. Ensure safe operation of equipment and maintain site safety at all times 2.5. ***Monitor conveyor*** performance utilising appropriate ***indicators*** to aid efficient operation 2.6. Assess weight and dimension of materials to ensure conveyor is not overloaded nor exceeding ***capacity of conveyor*** in compliance with specifications 2.7. Monitor conveying process to ensure that spillage is minimised 2.8. Remove or manage ***contaminants*** upon identification 2.9. Complete work according to agreed work plan and outcomes 2.10. ***Shutdown*** conveyor in accordance with procedures and ***safety requirements***

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3. Carry out operator maintenance	3.1. Isolate conveyor before conducting minor maintenance 3.2. ***Clean conveyor*** in accordance with standard operator procedures and safety requirements 3.3. Inspect equipment and report faults and make equipment available for routine operational servicing 3.4. Carry out minor maintenance and make minor adjustments to equipment 3.5. ***Inspect***, ***test*** and report conveyor after maintenance and/or ***conveyor shift*** and prior to return to service 3.6. Clear worksite of tools, debris and defective components and restore to site and safety requirements 3.7. Carry out reporting of defects

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct conveyor operations:

- apply legislative, organisation and site requirements and procedures
- interpret and apply legislative requirements and procedures
- interpret and apply site requirements and procedures
- interpret and apply manufacturer's manuals, requirements and procedures
- interpret and apply work requirements
- apply worksite hazards identification and response procedures
- organise work tasks
- apply maintenance and housekeeping requirements and procedures
- apply conveyor equipment operation and maintenance requirements and procedures
- apply diagnostic techniques
- apply hazardous substances handling procedures
- use communications equipment
- apply records maintenance requirements
- apply report preparation requirements
- work in a team

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct conveyor operations:

- Legislative, manufacturer's and site requirements and procedures
- worksite coordination requirements
- site and equipment safety requirements and procedures
- site conveyor systems and related equipment configurations
- site conveyor systems equipment characteristics, technical capabilities and limitations
- conveyor operational procedures and checks
- night and day working conditions
- hazard identification and risk assessment and response procedures
- site environmental and ground condition requirements and constraints related to site conveyor systems
- production targets, optimum loading condition of belts
- materials transported and their characteristics

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- minor maintenance requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting conveyor operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conveyor operations • working with others to undertake and complete conveyor operations that meet all of the required outcomes • consistent timely completion of conveyor operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conveyor operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Briefings or handover details may include:	• status of system/permits • machine defects/faults • production and dogging plan • work group details • potential hazards • maintenance plan
Pre-operational checks are those checks specified by the manufacturer prior to operating the item of equipment and may include:	• computer systems • conveyor belt and components • display instrumentation and gauges (indicators, gauges, laser levels) • greasing components • visual and audio warning devices and lights • emergency stop systems
Environmental issues and ground conditions may include:	• culturally-sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality • fire holes

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	• cracking • aquifers
Potential hazards and risks may include:	• power lines • overhead service lines • obstructions • structures • other equipment, vehicles, people • dangerous material • underground services • water • adjoining walls • abandoned equipment • adverse weather conditions • chemicals • contaminants • equipment • unsafe ground • unstable faces • overhanging rock
Indicators may include:	• computer indicators • conveyor indicators
Monitor conveyor may include:	• optimising the system, including belt tracking and loading/transfer of material at transfer stations • ensuring all personnel are authorised and correctly attired • investigating, rectifying and/or reporting faults/defects • applying manufacturer manual and site standard operating procedures
Capacity of conveyor may be affected by:	• duration of operations • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations • weather conditions
Contaminants may include:	• animal carcases (sheep, cows, kangaroos) • cigarette buts • consumables • ear plugs • explosives • metal basket teeth

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	• metal or steel rods • old fencing • old piping • plastic • timber • rock bolts • vent bags • rubber
Shutdown must include:	• rectifying and/or reporting all faults/defects, conditions and outstanding faults • restoring conveyor to condition for next start-up • completing all logs and reporting requirements
Safety requirements and procedures may include:	• following access and permit procedures • adjust for safety requirements as specified in Australian standards for conveyors • procedures for clearing blocked chutes and excessive spills • procedures for moving parts and pot machinery • proving the equipment function and correct lamp is activated • activating all safety devices • testing lamp indicators
Clean conveyor may include:	• correct selection, use and storage of equipment • conveyor being free from spillage and obstructions • walkways clear and clean • water from monitor and excess water clear of electrical equipment • mobile plant organised for large spills
Inspect and test may include:	• conveyor conditions and wear • excessive build up of material • belts • sensors and indicators • idlers and pulleys • frames • motors and gear boxes • fish plates and sleepers • spill curtains
Conveyor shifting includes:	• removal of belt tension • clean head and tail sections

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	• issue permits • anchor posts • test runs • position hopper

Unit Sector(s)

Plant and Equipment Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPEO202A Provide deck support for conveyor-car high wall mining operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the providing of deck support for conveyor-car high wall mining operation in coal mining. It includes the functions for loading/ unloading, operation and maintenance of conveyor-cars and operation of pendant controls during high-wall mining operations.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the providing of deck support for conveyor-car high wall mining operation 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding, to provide deck support for ***conveyor-car high wall mining*** operation 1.3. Access, interpret and apply ***geological and survey data*** required to complete the allocated work 1.4. Carry out pre-start procedures 1.5. Access and apply ***safety information and procedures*** throughout the work 1.6. Recognise and ***respond to emergency*** and/or ***hazardous conditions*** throughout the work sequences
2. Load and unload cars	2.1. ***Coordinate*** activities related to the loading and unloading of cars with others at the site prior to commencement of, and during, the work activity 2.2. Carry out the ***staging and positioning*** of cars correctly in accordance with manufacturer instructions and site procedures/plans 2.3. Carry out ***cable connections*** correctly
3. Operate cars	3.1. Coordinate activities related to the operation of cars with others at the site prior to commencement of, and during, the work activity 3.2. Carry out start-up, sequencing and shutdown procedures 3.3. Remove surface dust from cars in accordance with site procedures and facilities. 3.4. Pin and unpin cars in accordance with mining procedures and plans 3.5. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment

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4. Carry out operator maintenance	4.1. Carry out equipment inspections and fault finding 4.2. Carry out routine operational servicing, lubrication and housekeeping tasks 4.3. Carry out minor maintenance to manufacturer instructions and site requirements 4.4. Provide operator support during preparation for, and conduct of, major maintenance tasks 4.5. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to provide deck support for conveyor-car high wall mining operation:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply hand-eye coordination
- work wearing noise protection equipment
- apply diagnostic techniques
- use hand tools
- apply equipment records maintenance requirements
- apply procedures for the dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to provide deck support for conveyor-car high wall mining operation:

- site and equipment safety procedures
- site mining systems and procedures
- conveyor-car equipment characteristics, technical capabilities and limitations
- conveyor-car maintenance systems and procedures
- site geological and survey data
- mine gases and their properties / impacts
- deck based gas monitoring systems, processes and responses
- cable management procedures
- emergency retraction procedures
- emergency evacuation and fire procedures
- site environmental requirements and constraints related to conveyor-car high wall mining operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for providing deck support for conveyor-car high wall mining operation • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the provision of deck support for conveyor-car high wall mining operation • working with others to undertake and complete the provision of deck support for conveyor-car high wall mining operation that meets all of the required outcomes • consistent timely completion of the provision of deck support for conveyor-car high wall mining operation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete deck support for conveyor-car high wall mining operation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details, and/or • work orders
Conveyor-car high wall mining system deck activities may include launch vehicle and conveyor-cars powered by:	• electric (over hydraulic) systems • water supply • IGG • communications • gas monitoring devices
Work requirements may include:	• equipment / plant identification / allocation • nature and scope of the work • working conditions • achievement targets • site lighting arrangements • defects on machine • hazards and potential hazards
Geological and survey data may include:	• go / no-go zones • high-wall stability • gas conditions • other operational and safety related issues
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • manager's rules • mining plans • OHS policy

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	• code of practice
Emergency response may include:	• blast door operations • stand-off ramp operations • re-action cylinder operations • emergency retraction • evacuation • fire procedures
Hazardous conditions may include:	• wet weather • gas • fire • explosions • highwall collapse • falling material
Coordination with others may include:	• the functions of the system operator • the loader driver
Staging and positioning may include:	• method of staging • angle of launch • impact of weather • staging devices • lanyard systems
Cable connection procedures are for both electrical and gas monitoring cables and cover:	• moisture • water • damage • dirt • coal • grease

Unit Sector(s)

Plant and Equipment Operation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPEO203B Conduct stacker operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of stacker operations in the metalliferous and coal mining industries. It includes planning and preparing for stacker operations, operating the stacker, and carrying out operator maintenance.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Metalliferous mining
- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for stacker operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conducting of stacker operations 1.2. Obtain, interpret and clarify/confirm ***work requirements*** and ***shift details*** before proceeding 1.3. Access, interpret and apply ***information on stockpile product***, ***formation and conditions*** required to complete the allocated work 1.4. Carry out worksite inspection and rectify or report *hazards* or other notifiable conditions 1.5. Access and apply ***safety information and procedures*** throughout the work
2. Operate stacker	2.1. ***Coordinate*** activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up and shutdown procedures 2.3. Operate controls to stack materials 2.4. Act on monitoring systems and alarms or report 2.5. Recognise and respond to ***hazardous and emergency situations*** 2.6. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment 2.7. Carry out ***reporting*** and complete and process documents
3. Carry out operator maintenance	3.1. Carry out plant and equipment inspections and faultfinding 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks 3.3. Carry out minor maintenance to manufacturer's instructions and site requirements 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks

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	3.5. Inspect and test structures and components for fault conditions, wear and need of repair or replacement 3.6. Process maintenance records

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct stacker operations:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information
- apply diagnostic techniques
- apply equipment hose down procedures
- apply procedures for preparation and communication of reports
- apply procedures for complying with environmental requirements
- apply procedures for disposal of environmentally sensitive fluids and materials
- apply records maintenance requirements
- apply procedures for working at heights

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct stacker operations:

- site and equipment safety requirements and procedures
- stockpile management processes
- stacker characteristics, technical capabilities and limitations
- stacker maintenance procedures/stacker operating procedures
- ore / coal type and quality
- blending specifications and techniques
- environmental requirements and constraints related to stacker operations
- recording and reporting processes
- impact of stacker operations on customer quality requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting stacker operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of stacker operations • working with others to undertake and complete stacker operations that meets all of the required outcomes • consistent timely completion of stacker operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete stacker operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may include:	• work plans • shift briefings • handover details • work orders
Shift details may include:	• nature and scope of the work • working conditions • production targets • defects on equipment • hazards and potential hazards • coordination requirements/issues
Stockpile product, **formation and conditions** may include:	• stockpile residue • stockpile design and position • safety factors relating to natural falls • grades • levels • slips • drainage
Safety information and procedures may include:	• site-specific safety processes and documentation such as JSAs
Coordinate may include:	• communication with process control, maintenance, supervision, logistics scheduler, mobile operators, contractors etc • monitoring operation of stacker ensuring that it does not collide with other equipment
Hazardous and emergency	• sinking

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situations may include:	• stockpile stabilisation • wet weather operation or severe storms • electrical start-up and shutdown • electrical fires • windy and dusty conditions • chute cleaning • working in close proximity to moving equipment and parts
Reporting may include:	• computer reports • accident/incident reports • pre-start equipment reports/defect reports • tags • work orders

Unit Sector(s)

Plant and Equipment Operation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPEO204A Conduct shore side mooring operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of shore side mooring operation in metalliferous mining. It includes the preparation and berthing of vessels and releasing vessels.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for berthing	1.1. Access, interpret and apply ***compliance documentation*** relevant to shore side ***mooring operation*** 1.2. Receive, interpret and clarify details of mooring operations tasks to be performed by the ***mooring crew*** 1.3. Select ***personal protective equipment*** appropriate for work activities 1.4. Identify, address and report potential ***hazards***, with action taken to minimise or eliminate risk to personnel, infrastructure, vessel and the environment 1.5. Ensure that all ***associated equipment*** is available and in allocated position ready for securing ship
2. Berth vessel	2.1. Communicate clearly and in a timely manner with ***personnel*** using approved ***communication methods*** 2.2. Receive instructions from shipping officer and carry out procedure for securing the vessel 2.3. Ensure that all safety procedures and practices are followed
3. Release vessel	3.1. Communicate clearly and in a timely manner with personnel using approved communication methods 3.2. Receive instructions from shipping officer for sequence of ships lines to be released 3.3. Release ships lines 3.4. Ensure that all safety precautions and procedures are followed

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct shore side mooring operations:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information/maintain accurate records
- identify plant status
- use safety equipment
- apply berthing and release requirements and procedures
- apply procedures for operating equipment, electric capstan winches, safety hooks & quick release hooks
- apply diagnostic techniques to determine equipment faults and to rectify/report as required
- use oral and written communications techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct shore side mooring operations:

- potential equipment and site hazards
- procedures and relative documentation
- isolation devices type and purpose
- emergency, fire suppression, fire alert and disaster procedures
- relevant operational and maintenance procedures and associated documentation
- hazard identification and risk assessment response procedures
- equipment associated with mooring operations
- relevant OHS legislation and policies

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting shore side mooring operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of shore side mooring operations • working with others to undertake and complete shore side mooring operations that meets all of the required outcomes • consistent timely completion of shore side mooring operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of shore side mooring operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mooring operations may include:	• throwing/heaving ship's lines • capstan winch operation • setting quick release hooks • running out mooring line • securing ship's lines • releasing ship's lines • preparing mooring area for operation • making fast to wharf, dolphin or mooring buoy • securing mooring lines
Mooring crew may include:	• contact person • lines person • capstan winch operator • assistant
Personal protective equipment may include:	• site standard PPE • life vests • gloves • torches • safety cage
Hazards may include:	• dust and water • heat • obstructions • structures • line breakage or movement • other equipment • vehicle movement on wharf

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	• line boat movement • wind and waves (swell) • falls • failure of equipment • damage to mooring lines • damage to lead lines • faulty or damaged machinery equipment • moving or rotating equipment • using equipment beyond SWL • moving heavy ropes/lines • unsafe lifting techniques • slippery wharf area • poor housekeeping
Associated equipment may include:	• radios • ship loader • lead lines • safety hooks • dolphins • electrical capstan winches • quick release hooks • keeper arms
Personnel may include:	• shipping officer • contact person • ship's pilot • ship's line crew • capstan winch operator • assistant • port authority control tower
Communication methods may include:	• radio • telephone

Unit Sector(s)

Plant and Equipment Operation

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIPEO205A Conduct ship loading operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of ship loader operations in metalliferous mining. It includes the planning and preparation for the operation, conducting loader and associates equipment operation and undertaking operator maintenance in all contexts to bulk load ore into bulk cargo vessels.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for ship loading operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conducting of ship loader operations 1.2. Obtain, interpret and clarify/confirm ***work requirements*** and ***shift details*** before proceeding 1.3. Access, interpret and apply ***information required*** to complete the allocated work 1.4. Carry out worksite inspection and rectify or report hazards or other notifiable conditions 1.5. Access and apply ***safety information and procedures*** throughout the work 1.6. Carry out pre-start, start-up, park-up procedures
2. Operate ship loader and associated equipment	2.1. ***Coordinate activities*** with others at the site prior to commencement of, and during the work activity 2.2. Operate controls for the following ***ship loader functions*** to load ship 2.3. Load ore in accordance with ship's hatch loading plan 2.4. Complete relevant ship loading and hatch tonnage documentation 2.5. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the Ship Loader 2.6. Carry out shutdown procedures
3. Fault find operational problems	3.1. Report or correct problems, monitoring systems and alarms 3.2. Recognise and respond to ***hazardous and emergency situations*** 3.3. Carry out ***reporting*** and complete and process documents
4. Carry out operator maintenance	4.1. Carry out plant and equipment inspections and faultfinding 4.2. Carry out routine operational servicing, lubrication and housekeeping tasks 4.3. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site

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	requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct ship loader operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply diagnostic techniques
- use hand and power tools
- apply equipment hose down and chute cleaning requirements and procedures
- communicate using radios, phones other techniques
- apply procedures for complying with environmental requirements (e.g. using dust suppression equipment)
- apply procedures for the disposal of environmentally sensitive fluids and materials
- apply records maintenance requirements
- apply data entry procedures into computer based system
- apply procedures for working at heights

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct ship loader operations:

- site and equipment safety requirements and procedures
- ship-loader characteristics, technical capabilities and limitations
- ship-loader maintenance and operating procedures
- ore type and quality
- environmental requirements e.g. dust suppression and constraints related to ship-loading operations
- recording and reporting processes
- impact of ship-loader operations on customer quality requirements
- impact of ship-loader operations on vessel loading specifications
- layout of vessel and potential structural hazards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting ship loader operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of ship loader operations • working with others to undertake and complete ship loader operations that meet all of the required outcomes • consistent timely completion of ship loader operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete ship loader operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements will be in the form of:	• work plans (hatch loading plans) • shift briefings • handover details • work orders
Shift details may include:	• nature and scope of the work • working conditions • production targets • defects on equipment • hazards and potential hazards • coordination requirements/issues
Information required may include:	• grade and ore type • hatch loading plans • position on wharf • weather conditions • tidal movements • ship movement • ship structure and potential hazards for boom collision
Safety information and procedures are contained in:	• site-specific safety processes and documentation such as JSAs
Coordination activities may include:	• communication with Control, Maintenance personnel, Supervision, Process Control Officer, Mobile Operators, shipping officer, representative on the ship (ship's master) etc • monitoring operation of ship loader ensuring

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	that it does not collide with other equipment (anti-collision systems active)
Ship loader functions include:	• Conveyor start & stop • Long travel • Slewing (left & right) • Luffing (up & down)
Hazardous and emergency situations may include:	• emergency evacuation procedure • heat • vehicle movement on wharf • wet weather operation or cyclones • electrical start-up and shutdown of equipment • loss of electrical supply • electrical fires • windy and dusty conditions • chute cleaning • working in close proximity to moving equipment and parts • boom collision with ship structures
Reporting may include:	• accident/incident reports • pre-start equipment reports/defect reports • hatch loading reports • entry of data into computer systems • tagging

Unit Sector(s)

Plant and Equipment Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPEO206A Lay and recover cables and hoses

Modification History

Not applicable.

Unit Descriptor

This unit covers the laying and recovering cables and hoses in coal mining. It includes the planning and preparing for; laying and recovery of cables and hoses; and carrying out operator maintenance on cable laying equipment.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for laying and recovery	1.1. Access, interpret and apply ***compliance documentation*** relevant to the laying and recovering cables and hoses 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Access and apply ***safety information and procedures*** throughout the work 1.4. Identify, obtain and prepare ***equipment*** required for the work as per the plan
2. Perform cable and hose laying and recovery	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up and shutdown procedures 2.3. Carry out ***cable and hose laying and recovery*** by engaging controls to govern speed, direction and tension 2.4. Lay excess cable safely 2.5. Prepare and visually inspect cables for connection, and mark the location 2.6. Recognise and respond to hazardous and emergency situations
3. Carry out operator maintenance on cable laying equipment	3.1. Carry out equipment inspections and fault-finding 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks 3.3. Carry out minor maintenance to manufacturer's instructions and site requirements 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks 3.5. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to lay and recover cables and hoses:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply hand-eye coordination
- apply diagnostic techniques
- use hand tools
- apply environmental constraints during cabling operations
- apply equipment records maintenance requirements
- apply procedures for the disposal of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to lay and recover cables and hoses:

- site and equipment safety requirements
- types, uses and characteristics of cables and hoses
- cable and hose safety
- cable and hose laying equipment characteristics, technical capabilities and limitations
- cable and hose laying and recovery operational and maintenance procedures
- maintenance procedures related to cable and hose laying operations
- basic geological, geographical and survey data
- hazard identification and response procedures
- site environmental requirements and constraints related to cabling operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for laying and recovering cables and hoses • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the laying and recovering cables and hoses • working with others to undertake and complete the laying and recovering cables and hoses that meet all of the required outcomes • consistent timely completion of the laying and recovering cables and hoses that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the laying and recovering cables and hoses

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be from:	• shift briefings • handover details, and/or • work orders
Work requirements may include:	• the nature and scope of tasks • achievement targets • locations and routes • equipment/plant allocation (, including any defects) • site lighting arrangements • special arrangements • coordination requirements/issues

Safety information and procedures may include:	• legislation and regulations
	• relevant Australian standards
	• management plans
	• OHS policy
	• code of practice
	• manufacturer's instructions
	• safe working procedures (or equivalent) including:
	  • boarding and disembarking procedures
	  • avoidance of water
	  • cable handling safety
	  • operational signal procedures

Equipment may include:	• cable reeler types including: • modified loaders

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	• trucks • scrapers • cable boat • cabling equipment and functions including: • establishing cable towers • establishing crossovers • working over high wall gantry • operating cable reelers • replacing wheels or drums • using stockings • star pickets • ropes • slings • signs/markers • other equipment including: • vehicles • graders • dozers
Cable and hose laying and recovery may include:	• the use of controls and capabilities of allotted equipment and the replacing of wheels or drums on an as required basis

Unit Sector(s)

Plant and Equipment Operation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPEO207A Coordinate conveyor system shift

Modification History

Not applicable.

Unit Descriptor

This unit covers the coordinating of conveyor system shift in coal mining. It includes the planning, preparing and setting up for conveyor shift, coordinating and monitoring the conveyor shift and testing and returning the conveyor to service.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for conveyor shift	1.1. Access, interpret and apply ***compliance documentation*** relevant to the coordinating of conveyor system shift 1.2. Receive, interpret and clarify ***briefings and survey plans*** 1.3. Carry out ***site inspection*** to determine the ***preparation requirements*** 1.4. Develop detailed ***conveyor shift*** plan 1.5. Identify and plan resources according to the conveyor shift requirements and site/mine procedures 1.6. Organise and brief relevant personnel on plan, timing, tasks and resolve ***coordination*** issues according to conveyor shift requirements and site/mine procedures
2. Set up for conveyor shift	2.1. Complete ***ground preparation works*** according to conveyor shift requirements and site/mine procedures 2.2. Coordinate relocation of fire service pipes 2.3. Coordinate minor maintenance 2.4. Coordinate setting and preparation of anchoring equipment/posts 2.5. Follow plans and ensure the issue of appropriate permits to isolate plant 2.6. Coordinate release of conveyor belt tension
3. Coordinate and monitor conveyor shift	3.1. Acquire appropriate resources both personnel and equipment 3.2. Prepare and or/relocate according to conveyor shift and ***safety requirements*** and site/mine procedures 3.3. Coordinate and monitor correct sequence of conveyor shift activities 3.4. Maintain safety standards 3.5. Diagnose ***problems*** and implement response actions where appropriate 3.6. Complete conveyor shift according to site/mine procedures
4. Test and return conveyor to service	4.1. Arrange for cancellation of permits and restore isolated plant in accordance with safety requirements and site/mine

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	procedures 4.2. Carry out test runs with unloaded and loaded belt 4.3. Inspect frames and conveyor belt for alignment, tension and fouling 4.4. Arrange for minor maintenance as required 4.5. Return conveyor system to service 4.6. Ensure site is clear of debris, tools, plant and machinery 4.7. Carry out recording and reporting

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to coordinate conveyor system shift:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply equipment records maintenance requirements
- apply planning and organising techniques
- apply techniques to lead a diverse team
- apply diagnostic techniques
- apply procedures for complying with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to coordinate conveyor system shift:

- mobile plant capabilities and limitations
- site and equipment safety requirements and procedures
- scope and limitations of operations related to this competency
- site conveyor systems and relocation coordination requirements
- relevant conveyor system and equipment characteristics, technical capabilities and limitations
- mine site geological conditions and survey data
- fire suppression, fire alert and disaster plan procedures
- hazard identification and risk assessment response procedures
- site environmental requirements and constraints related to conveyor/bucketwheel system

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the coordinating of conveyor system shifts • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conveyor system shifts • working with others to undertake and complete conveyor system shifts that meets all of the required outcomes • consistent timely completion of conveyor system shifts that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete conveyor system shifts

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Briefings and survey plans may include:	• relationship to trunk/main conveyors • type of conveyor shift • schedules times • position of digging machinery
Site inspection may include:	• accessibility for plant • stability and evenness of surface • location of electrical services and cables • location of hopper • cracks in rail and/or plates
Ground preparation works may include:	• pads • ramps • roads • cable routes

Conveyor shift may include:	• parallel
	• tail end
	• head end
	• pivot
	• combination
	• conveyor shift systems may vary in:
	  • distance
	  • number of sections
	  • transfer stations
	  • shuttles

Coordination may include:	• other mobile plant operators • maintenance contractors

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	• conveyor shifting supervisor
Safety requirements may include:	• legislation and regulations • relevant Australian standards • coordination plans • coordination rules • OHS Policy • code of practice • manufacturer's manuals and instructions • safe working or job procedures • training resources
Problems may include:	• fish plates • rail cracks • sleeper/frame fixings broken • belt stretching or pinching

Unit Sector(s)

Plant and Equipment Operation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPEO208A Extend, retract and maintain conveyor componentry

Modification History

Not applicable.

Unit Descriptor

This unit covers the extension, retraction and maintenance of conveyor componentry in coal mining industries. It includes planning and preparing, installation and retraction of belt conveyor componentry, and carrying out conveyor maintenance.

Application of the Unit

This unit is appropriate for those working in a role assisting with extension, retraction and maintenance of conveyor componentry within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Access, interpret and apply geological and survey data required to complete the allocated work. 1.4. Access and apply ***safety information and procedures*** throughout the work 1.5. Obtain, transport and prepare materials and resources required for the work in accordance with the plan and relevant manufacturer or site requirements 1.6. Prepare the worksite in accordance with site requirements
2. Install and retract belt conveyor componentry	2.1. Coordinate activities with others at the site prior to commencement of, and during, the work activity 2.2. Establish and monitor ***safe work environment*** throughout the job 2.3. Isolate and connect auxiliary componentry in accordance with the manufacturer and site procedures 2.4. Extend/retract belt ***conveyor componentry*** in accordance with manufacturer and/or site requirements and legislative regulations 2.5. Inspect conveyor for line and level and test to ensure functionality, safety and compliance with specifications 2.6. Recover conveyor equipment systematically, in accordance with site procedures and with minimal loss and damage to the recovered equipment 2.7. Recognise and respond to hazardous and emergency situations in accordance with manufacturer instructions and site procedures
3. Carry out conveyor maintenance	3.1. Conduct inspection and fault finding in accordance with manufacturer recommendations and site requirements 3.2. Carry out routine operational servicing,

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	lubrication and housekeeping tasks in accordance with manufacturer and site procedures 3.3. Carry out minor maintenance to manufacturer and/or site requirements and legislative requirements 3.4. Provide operator support during preparation for and conduct of major maintenance tasks, in accordance with site requirements 3.5. Maintain records in accordance with site requirements/agreements and legislation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to extend, retract and maintain conveyor componentry:

- apply legislative, organisation and site requirements and procedures for extending, retracting and maintaining conveyor componentry
- access, interpret and apply technical and safety information
- interpret and apply survey information and plans
- operate relevant plant and machinery
- communicate and coordinate activities with others
- apply diagnostic / fault finding techniques
- use relevant hand tools
- maintain equipment records
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to extend, retract and maintain conveyor componentry:

- operational safety requirements
- mine operational procedures
- conveyor operations and componentry
- relevant conveyor assembly procedures
- relevant geological and survey information
- conveyor maintenance requirements
- site environment requirements and constraints related to conveyor work

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for extending, retracting and maintaining conveyor componentry • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of extension, retraction and maintenance of conveyor componentry • working with others to undertake and complete the extension, retraction and maintenance of conveyor componentry that meets all of the required outcomes • consistent timely completion of extension, retraction and maintenance of conveyor componentry that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the insert unit information

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders • safe working procedures (or equivalent) • nature and scope of the job • hazards and work environment • related work activities • sequencing • site access
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice • manufacturer instructions • safe working procedures (or equivalent)
Safe work environment includes:	• isolation • tagging • restoration after isolation • dust suppression
Conveyor componentry may include:	• belt • rollers • structures • lock-outs • belt control equipment • safety equipment

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	• hand tools
Operator (operational) maintenance	• procedures are those established and authorised for the site

Unit Sector(s)

Coal Mining (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPEO301A Conduct conveyor-car high wall mining operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting conveyor-car high wall mining operations in coal mining industries. It includes planning and preparing for operations, positioning the launch, mining coal, and carrying out operator maintenance.

Application of the Unit

This unit is appropriate for those working in a role assisting with conducting conveyor-car high wall mining operations within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify / confirm ***work requirements*** before proceeding. 1.3. Access, interpret and apply ***geological and survey data*** required to complete the allocated work in accordance with site procedures. 1.4. Identify and obtain / schedule ***resources*** required for operations to support the mining sequence. 1.5. Access and apply ***safety information and procedures*** throughout the work.
2. Position the launch	2.1. Co-ordinate activities related to the positioning of the launch with others at the site prior to commencement of, and during, the work activity. 2.2. Carry out pre-start, start-up and shutdown procedures in accordance with manufacturer instructions and site procedures. 2.3. Position the launch correctly in accordance with manufacturer instructions and site procedures/plans. 2.4. Act on or report monitoring systems and alarms in accordance with manufacturer instructions and site procedures. 2.5. Recognise and respond hazardous conditions in accordance with manufacturer instructions and site procedures.
3. Mine coal	3.1. Co-ordinate activities related to the mining of coal with others at the site prior to commencement of, and during, the work activity. 3.2. Complete function tests on the miner and belts in accordance with manufacturer instructions and site procedures. 3.3. Conduct and control mining procedures in accordance with manufacturer instructions and site procedures. 3.4. Maintain supply of coal to the stacker in

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	accordance with manufacturer instructions and site procedures. 3.5. Act on or report monitoring systems and alarms in accordance with manufacturer instructions and site procedures. 3.6. Recognise and respond to hazardous and emergency situations in accordance with manufacturer instructions and site procedures. 3.7. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.
4. Carry out **operator maintenance**	4.1. Carry out equipment inspections and fault finding in accordance with manufacturer instructions and site requirements. 4.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer instructions and site authorised procedures and practices. 4.3. Carry out minor maintenance to manufacturer instructions and site requirements. 4.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site requirements. 4.5. Process records in accordance with site requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct conveyor-car high wall operations:

- apply legislative, organisation and site requirements and procedures for conducting conveyor-car high wall operations
- apply operational safety requirements
- access, interpret and apply technical information
- apply hand-eye coordination
- work wearing noise protection equipment
- apply diagnostic techniques
- use relevant hand tools
- maintain equipment records
- dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct conveyor-car high wall operations:

- site and equipment safety procedures
- site mining systems and procedures
- conveyor-car high wall mining equipment characteristics, technical capabilities and limitations
- conveyor-car high wall mining maintenance systems and procedures
- site geological and survey data
- mining conditions and related methods / techniques
- mine gases and their properties / impacts
- gas monitoring systems, processes and responses
- site system monitoring capabilities and uses
- cable management procedures
- hazard identification and response procedures, including retraction, evacuation and fire
- site environmental requirements and constraints related to conveyor-car high wall mining operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting conveyor-car high wall mining operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conveyor-car high wall mining operations • working with others to undertake and complete the conveyor-car high wall mining operations that meets all of the required outcomes • consistent timely completion of conveyor-car high wall mining operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the insert unit information

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Work requirements may include:	• equipment/plant identification/allocation • nature and scope of the work • working conditions • achievement targets • site lighting arrangements • defects of machine • hazards and potential hazards
Geological and survey data may include:	• go/no-go zones • high-wall stability • drive position • gas conditions • seam pitch • seam conditions • other operational and safety related issues
Resources may include:	• correct lighting • loaders • dozers • cameras • water supply • fuel supply • inertisation or flushing equipment • lubricants • power supply

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	• consumable parts
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards • management plans • manager's rules • mining plans • OHS policy • code of practice • manufacturer instructions • safe working or job procedures (or equivalent)
Monitoring systems and alarms are those which indicate vital signs and out of specification activities/operations.	
Function tests may include:	• chain conveyor • cutter-heads • traction • shear-up/down • camera sprays • pan up/down • water sprays • steering wings • stab-jack • belt tracking • propulsion
Conveyor-car high wall mining system may be powered by electric (overhydraulic systems) and include:	• launch vehicle • stacker • continuous miner • conveyor cars
Specific safety requirements are to include:	• boarding and disembarking procedures • relocation procedures • shift blasting schedules • advance and retraction procedures • operational signal procedures
Coordination and monitoring requirements in relation to the positioning of the launch may include:	• pit preparation • survey controls • stacker positioning
Coordination requirements related to the mining coal may involve the	

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functions of pinman/deckman and the loader driver.	
Operator controls may include:	• TV/computer monitors • navigation screen • miner controls • conveyor controls • hydraulic pump controls • fault monitoring • gas monitoring • supervisory control and data acquisition • communication
Supply **stacker** adjustments may include:	• levelling and re-aligning of stacker • bridge conveyor
Mining **monitoring and response** requirements may include:	• pitch • roll • spalling • guttering • roof conditions • water (in-rush) • floor conditions • coal flow • gaseous situations
Work area **monitoring and response** requirements may include:	• high wall stability • low wall stability • lighting • associated / close proximity machinery • equipment and personnel • impact of weather conditions.
Responses to gaseous situations may include:	• inertisation • flushing • ceasing mining • interpretation of Coward's triangle • extraction • retraction • methane monitoring
Hazards may include:	• wet weather • gas • fire • explosions • highwall collapse

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	• falling material
Emergency response requirements to unscheduled power outrage may include:	• auxiliary power supply • haulage jewellery • retrieval gear (sheave blocks)
Emergency response requirements to roof fall may include:	• retrieval gear • jewellery • increased hydraulic pressure to rams
Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Coal Mining (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPEO302 Operate and monitor ore car dumpers

Modification History

Not applicable.

Unit Descriptor

This unit covers the monitoring and operation of ore car dumpers in the metalliferous mining industry. It includes preparing for car dumper operations by monitoring operation, carrying out equipment inspections and checks, maintaining equipment, and shutting down and/or isolating car dumpers. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining
-

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Prepare for car dumper operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Access and apply rail procedures while working in or around car dumpers 1.3 Identify yard layout limit and locations of derailers 1.4 Establish and maintain communication with other ***personnel*** using approved ***communication methods*** 1.5 Assist rail operations to position ore cars safely in the car dumper
2. Implement car dumper safety procedures	2.1 Access and identify locations of emergency stops 2.2 Locate first aid areas 2.3 Identify and report potential risks and hazards 2.4 Identify and report ***environmental issues*** 2.5 Select ***personal protective equipment*** appropriate for work activities
3. Monitor car dumper operations	3.1 Check correct plant operation prior to start-up 3.2 Receive, interpret and clarify shift changeover details 3.3 Carry out car dumper ***pre-start checks*** on all ***levels*** 3.4 Conduct prestart checks and ongoing plant inspection, take ***equipment indicator readings*** and identify, rectify and report defects and potential problems 3.5 Interpret and respond to car dumper alarms, take actions and notify appropriate personnel 3.6 Monitor the ore handling system, equipment operation and personnel safety
4. Maintain car dumper	4.1 Carry out rail isolations in preparation for maintenance

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equipment	4.2 **Clean** plant to maintain condition equipment , ***level*** and work area hygiene 4.3 Inspect and maintain the work area
5. Shutdown car dumper equipment	5.1 Carry out car dumper shutdown procedures according to equipment configurations, system and safety requirements 5.2 Isolate fixed plant and equipment for maintenance 5.3 Perform post shutdown and isolation checks 5.4 Provide support for maintenance personnel 5.5 Complete all required documentation clearly, concisely and on time 5.6 Pass on shift change-over details to oncoming shift

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•

Required Skills and Knowledge

Required skills
Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to monitor and operate fixed plant and equipment: • apply legislative, organisation and site requirements and procedures for monitoring and operating fixed plant and equipment • operate fixed plant/equipment • apply safe work practices • conduct isolations on plant/equipment to site requirements
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to monitor and operate auxiliary plant and equipment: • Rail yard plant configuration and function • Fixed plant/equipment configuration and function • breakdown procedures • emergency procedures • troubleshooting techniques • fixed plant and equipment limitations and operating parameters • plant and equipment safety requirements • isolation procedures • occupational health and safety procedures

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- operational procedures and checks
- site procedures
- site safety requirements
- environmental requirements and procedures

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Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for monitoring and operating car dumpers • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of car dumper and equipment monitoring and operation • working with others to undertake and complete the monitoring and operation of car dumper and equipment that meets all of the required outcomes • consistent timely completion of car dumper and equipment monitoring and operation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include

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	equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidates: • undertaking and completing the monitoring and operation of auxiliary plant and equipment
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Personnel may include	• rail operations • plant operators • plant control
Communication methods may include	• two way radios • hand signals • underground cap lamp signals • team briefing • shift changeover meeting

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Levels must include	• ground • barrel • trunnion • vault • apron
Personal Protective Equipment may include:	• safety boots • goggles/face shield • hearing protection
Pre-start checks may include**:**	• availability of equipment • detection of conditions that are unusual • job requirements • personnel availability • levels • communications
Environmental issues may include:	• dust (dump) • emissions • noise • run-off/spills • waste management and disposal
Plant and equipment may include:	• distribution control system (DCS) • motors/pumps and pumping systems • hydraulic systems and equipment • conveyors and conveyor systems • compressors and compressed air systems • fans and guards • conveyors/conveyor systems • rollers • grates • hoses (air and water) • scrubbers • gauges and meters • feeders • sumps • limit switches • car dumpers • car positioner
Equipment indicator readings may include:	• levels • speed • unusual noises • vibrations • Computer monitoring

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Start-up checks and procedures may include the inspection of:	• cameras and monitoring • interlocks • distribution control system • hydraulic systems • pumps and pumping systems • screen inspections • valves • visual and audible warning devices and lights • suppression systems • car positioner
Monitor may include:	• blockages and spillages • feed rates • wear and tear • levels
Maintenance may include:	• lubrication • minor adjustments to fixed operational plant • assisting with temporary small repairs • cleaning plant, equipment and work area • reporting leaks • reporting seal damage
Clean may refer to cleaning methods that may include:	• hosing with water • high pressure cleaning • manual removal of build-up

Unit Sector(s)

Plant and Equipment Operations

Custom Content Section

Not applicable.

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RIIPGP201A Conduct pump operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of pump operations in the metalliferous mining industry. It includes planning and preparing for pumping operations, pumping material, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for pumping operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Identify, address and report ***potential risks and hazards*** 1.5. Select personal protective equipment appropriate for work activities 1.6. Conduct equipment ***pre-start checks*** 1.7. Identify, address and report ***environmental issues*** 1.8. Communicate with other personnel 1.9. Adhere to emergency procedures
2. Pump material	2.1. Carry out start-up and shutdown procedures 2.2. Operate equipment within recommended speed, engine capability and limitations 2.3. Monitor equipment performance utilising appropriate ***indicators*** 2.4. Complete work according to agreed work plan and outcomes 2.5. Constantly monitor pressure and flow of material
3. Carry out operator maintenance	3.1. Conduct visual inspection and fault finding 3.2. Conduct routine operational servicing to ensure peak performance of equipment 3.3. ***Clean equipment*** 3.4. Complete all required records and documentation accurately and promptly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct pump operations:

- apply legislative, organisation and site requirements and procedures for conducting pump operations
- maintain, clean and operate equipment
- identify hazards
- handle hazardous goods
- maintain records
- monitor operations
- employ safe work practices
- fault finding
- use communications equipment
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct pump operations:

- emergency procedures
- environmental principles
- equipment processes, technical capability and limitations
- equipment safety requirements
- isolation procedures
- material under pressure
- mine operational system
- occupational health and safety procedures
- operational procedures and checks
- pumping operations
- pumping safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting pump operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of pump operations • working with others to undertake and complete the conduct of pump operations that meets all of the required outcomes • consistent timely completion of pump operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of pump operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Pre-operational checks are those checks specified by the manufacturer prior to operating the item of equipment and may include:	• computer systems • display instrumentation and gauges (indicators, gauges, laser levels) • pump and componentry • visual and audio warning devices and lights
Capacity of pump may include:	• duration of operation • efficient and safe operating speed • operating limitations • pressure limitations • type of activities performed
Indicators may include:	• computer indicators
Visual inspection and fault finding may include:	• danger tags • fire suppression unit (pins in position in triggers) • light positioning and cleanliness • oil leaks • personnel proximity • portable fire extinguisher (bracket, gauge, hose, ease of access) • stress in pipelines
Equipment cleaning methods may include:	• degreasing • forced air • steam cleaning • vacuum • water

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Potential risks and hazards may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground • unstable faces • vehicles
Environmental issues may include:	• culturally-sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality
Site conditions may include:	• broken ground • day and night • degree of compaction • location of water table • slope of working surface • stable ground (compaction) amount of scale • wet and dry • working over old underground workings and voids
Materials in suspension may include:	• ore • organic solvents • contaminants • precipitates

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Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPGP202A Handle reagents

Modification History

Not applicable.

Unit Descriptor

This unit covers the handling of reagents in the metalliferous mining industry. It includes planning and preparing for reagent handling, starting up equipment in sequence, mixing reagents, adding reagents, transferring and storing reagents, shutting down in sequence and/or isolating equipment, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for reagents handling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Communicate with other personnel using approved communication methods 1.5. Select personal protective equipment appropriate for work activities 1.6. Select appropriate type of ***auxiliary equipment*** for work activities 1.7. Perform equipment ***pre-start checks*** 1.8. Identify, address and report potential risks and hazards 1.9. Identify, address and report ***environmental issues*** 1.10. Select appropriate reagents 1.11. Adhere to emergency procedures 1.12. Use approved fume suppression and extraction methods
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Mix reagents	3.1. Safely ***mix reagents*** to required parameters 3.2. Continuously inspect plant and identify defects and potential problems
4. Add reagents	4.1. Add reagent according to specified dosage and recommended location 4.2. Complete all required documentation clearly, concisely and on time 4.3. Pass on shift changeover details to oncoming shift
5. Transfer and store reagents	5.1. ***Transfer reagents*** 5.2. ***Store reagents*** in approved storage ***facility*** 5.3. Confirm sufficient quantities of reagents are maintained according to site requirements

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6. Shutdown in sequence and/or isolate equipment	6.1. Shutdown or isolate equipment based on process and safety requirements 6.2. Perform ***post shutdown*** or isolation checks
7. Conduct housekeeping activities	7.1. ***Clean plant*** to maintain condition of all equipment 7.2. Manage and report hazards

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to handle reagents:

- apply legislative, organisation and site requirements and procedures for handling reagents
- operate, maintain and clean equipment
- identify hazards
- handle hazardous substances interpret reports
- apply lifting techniques (manual, cranes and loads)
- monitor operations
- report defects
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to handle reagents:

- contaminant identification
- emergency procedures
- environmental procedures
- equipment limitations and operating parameters
- equipment safety requirements
- hazardous goods procedures and consequences of spills
- identifying repair requirements
- isolation procedures
- metallurgical and technical data (basic)
- occupational health and safety procedures
- operational procedures and checks
- reagent types and how to mix them
- site procedures
- site safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for handling reagents • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of reagent handling • working with others to undertake and complete the handling of reagents that meets all of the required outcomes • consistent timely completion of reagent handling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the handling of reagents

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• feeders • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses (water and air) • hydraulic units • pump systems • racks • radiation gauges • spray systems
Plant cleaning may include:	• degreasing • high pressure cleaning • hosing with water • suction
Monitoring may include the checking of:	• blockages and spillages • pressures • temperatures
Pre-start checks may include:	• availability of equipment (e.g. conveyor) • detection of conditions that are unusual • fluid levels • job requirements • personnel availability • walk through plant
Post-shutdown checks are like pre-start checks.	

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Start-up procedures may include:	• auxiliary check equipment • establish relevant communications • plant checks • safety mechanisms • shift changeover details
Storage may include:	• box • silo • tank
Transfer of reagents may include:	• conveyors • mobile equipment • pump-line
Reagent mixing may include:	• automated • manual • some reagents may not require mixing
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality

Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPGP203A Operate compressors

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of compressors in the metalliferous mining industry. It includes starting up compressors, monitoring and controlling compressors, changing compressor output, maintaining plant effectiveness, and shutting down compressors. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Start-up compressor	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare for ***compressor*** operation 1.3. Perform pre-start-up checks 1.4. Start-up ***individual items of equipment*** and the entire compressor system 1.5. Start-up normally and after maintenance 1.6. Build pressure steadily with no surging 1.7. Stabilise compressor system to produce specified pressures and flows within minimum time
2. Monitor and control the compressor	2.1. Complete routine checks, logs and paper work 2.2. Recognise the signs of ***potential and actual problems*** 2.3. Take action to minimise the impact on safety, health, the ***environment*** and the business of potential and actual problems 2.4. Monitor temperatures and lubrication oil and take action as required 2.5. Trim plant to achieve required pressures and flows while maximising plant efficiency
3. Change compressor output	3.1. Predict the need to change compressor output to meet process requirements 3.2. Change compressor output as required 3.3. Manage changes smoothly and in a timely manner
4. Maintain plant effectiveness	4.1. Frequently and critically monitor all plant throughout shift 4.2. Use measured/indicated data and smell, sight, sound and feel as appropriate to monitor plant 4.3. Identify critical equipment/processes and tune their performance 4.4. Identify issues likely to impact on plant performance and take appropriate action 4.5. Predict impact of a change in one unit/area on other plant units/area and communicate

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	this to relevant people 4.6. Test trips and alarms 4.7. Prepare plant for maintenance/vessel entry as required 4.8. Complete minor maintenance according to standard procedures 4.9. Receive plant back from maintenance 4.10. Prepare plant for the introduction of gas and operation
5. Shutdown compressor	5.1. Determine type of shutdown required 5.2. Give advanced warning of shutdown where possible 5.3. Changeover individual items of equipment 5.4. Shutdown individual items of equipment and the entire compressor system 5.5. Shutdown in an emergency when required 5.6. Reset trips and alarms after a shutdown 5.7. Leave plant in a condition ready to restart 5.8. Shutdown for maintenance when required

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate compressors:

- apply legislative, organisation and site requirements and procedures for operating compressors
- distinguish between:
  - process gas
  - instrument
  - equipment (electrical/mechanical)
- maintain compressors
- identify causes of problems
- isolate problems to item of equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate compressors:

- principles of compressor operation
- effects of temperature and compression ratio/the need for multi staging
- pressure/temperature relationships and effects on condensation (e.g. moisture and/or gas)
- control of output
- causes of, and remedies for surging
- methods of resolving problem

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating compressors • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of compressor operation • working with others to undertake and complete the operation of compressors that meets all of the required outcomes • consistent timely completion of compressor operation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of compressors

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Compressors may include:	• reciprocating compressors
	• rotary compressors (e.g. screw, centrifugal)
	• and may be:
	  • multistage
	  • intercoolers
	  • advanced lubrication systems

Individual items of equipment may include:	• pumps • utilities • heat exchangers and may also include other equipment as well as compressor itself • cooling towers
Potential and actual problems may include:	• surging • control of temperature • variations to feed
The **environment** refers to environmental requirements that may include:	• drainage • dust and fumes • emissions • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality

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Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPGP204A Carry out bore-field operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of bore-field operations in the metalliferous mining industry. It includes planning and preparing for bore-field activities, monitoring water, operating and monitoring bore-field equipment, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for bore-field activities	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Communicate with other personnel using approved ***communication*** methods 1.5. Select personal protective equipment appropriate for work activities 1.6. Select appropriate type of equipment and reagents according to job type to maximise efficiency and effectiveness of work activities 1.7. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.8. Identify, address and report potential risks and hazards 1.9. Identify, address and report ***environmental issues*** 1.10. Adhere to emergency procedures to ensure safety of personnel and ***plant***
2. Plan and prepare for bore-field activities	2.1. Dip bore and record water level 2.2. Take sample and test according to site requirements 2.3. Adjust water quality and quantity to meet processing requirements 2.4. ***Monitor*** water storage levels
3. Operate and monitor bore-field equipment	3.1. Take and interpret data from equipment ***indicator readings*** and adjust flow to maintain dam/tank levels 3.2. Continuously inspect plant and pipelines to identify defects and potential problems 3.3. Identify, remove and dispose of ***contaminants*** to environmental and site requirements 3.4. Adjust equipment to approved operating parameters to optimise performance, maintain efficient water treatment systems and to meet water quality targets 3.5. Observe safety procedures regarding

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	protection from the elements and communication with site
4. Conduct housekeeping activities	4.1. ***Clean equipment*** to maintain condition of equipment and ensure safe and efficient operations 4.2. Clean and store ***auxiliary service equipment*** 4.3. Manage and report hazards to maintain a safe working environment 4.4. Complete all required documentation clearly, concisely and on time 4.5. Pass on shift change-over details to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to carry out bore-field operations:

- apply legislative, organisation and site requirements and procedures for carrying out bore-field operations
- identify hazards
- handle hazardous goods
- interpret reports
- apply lifting techniques (manual, cranes and loads)
- maintain records
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to carry out bore-field operations:

- breakdown procedures
- bore / catchment/dam procedures
- contaminants
- detoxification procedures
- emergency procedures
- environmental and heritage procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- hazardous goods procedures and consequences of spills
- identifying repair requirements
- isolation procedures
- occupational health and safety procedures
- operational procedures and checks
- pumping systems
- reagents
- site safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for carrying out bore-field operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of bore-field operations • working with others to undertake and complete the carrying out of bore-field operations that meets all of the required outcomes • consistent timely completion of bore-field operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the carrying out of bore-field operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Communication methods may include:	• telemetry system • satellite phone • two-way radio
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • vehicle and equipment for remote travel • job requirements • personnel availability • walk through the plant/around settling pond/drive along pipe line
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • recycling • run-off • spills • waste management and disposal • water quality
Plant may include:	• pumps (fixed) • lines • storage tanks/dams
Monitor may include the checking of:	• leakage • blockages and spillages • water levels

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	• road condition and accessibility • wear and tear of equipment • weather conditions • environmental problems
Indicator readings may measure:	• current • flow • level • pressure • unusual noises (e.g. cavitation) • vibrations
Contaminants are anything other than the water. Most common contaminants may include:	• animals • containers and packaging • fuels and oils • rubbish
Clean equipment may involve methods that may include:	• dismantling • flushing • de-scaling
Auxiliary service equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• discharge lines • sets (generator) • hand and power tools • hoses (water and air) • level and pressure indicators • pump system • strainers

Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPGP205A Handle, store and use cyanide

Modification History

Not applicable.

Unit Descriptor

This unit covers the safe handling, storage and use of cyanide within the gold mining industry. It includes accessing and applying site cyanide safety procedures; applying personal safety measures; identifying and reporting incidents/hazards; protecting workers and the environment during cyanide handling and storage; managing cyanide process solutions and HCN gas emissions to protect human health and the environment; protecting workers' health and safety from exposure to cyanide solutions and HCN gas; and applying emergency procedures.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Access and apply site Cyanide safety procedures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the safe handling, storage and use of ***cyanide*** 1.2. Apply ***mine site safe operating procedures*** for managing ***potential hazards***, ***risks and emergencies*** 1.3. Apply mine site safety reporting procedures
2. Apply personal safety measures	2.1. Maintain a clean and tidy workplace 2.2. Use appropriate ***personal protective equipment*** 2.3. Apply correct hazardous substance safety procedures 2.4. Obtain permits and clearance before specialised work is carried out, according to site procedures
3. Identify and report incidents/hazards	3.1. Identify, manage and report potential hazards, risks and emergencies 3.2. Report incidents to approved personnel 3.3. Record clearly and concisely the details of any incident, hazards and/or injury
4. Protect workers and the environment during cyanide handling and storage	4.1. Identify quality control and quality assurance procedures, spill prevention and spill containment measures 4.2. Maintain and control unloading, storage and mixing facilities using routine inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures
5. Manage cyanide process solutions and HCN gas emissions to protect human health and the environment	5.1. Identify and apply operating systems and procedures designed to protect human health and the environment 5.2. Identify and apply management and operating systems designed to monitor and minimise cyanide use 5.3. Identify and apply measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions 5.4. Identify and apply measures designed to

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	manage seepage from cyanide facilities to protect the beneficial uses of ground water 5.5. Identify and apply spill prevention or containment measures for process tanks and pipelines
6. Protect workers' health and safety from exposure to cyanide solutions and HCN gas	6.1. Identify potential cyanide exposure scenarios and measures necessary for their elimination, reduction and control 6.2. Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures 6.3. Identify and apply emergency response plans or procedures regarding worker exposure to cyanide
7. Apply emergency procedures	7.1. Recognise and respond to alarms and warning devices according to mine site procedures 7.2. Identify and correctly use ***self rescue equipment*** in accordance with manufacturer's instructions and site procedures 7.3. Apply basic fire fighting techniques according to mine site procedures 7.4. Maintain familiarity with emergency escape route(s) according to mine site procedures 7.5. Apply mine site emergency response plans and procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to safely handle, store and use cyanide within the gold mining industry:

- apply legislative, organisation and site requirements and procedures
- apply hazards identification and control procedures
- apply incidents reporting requirements and procedures
- apply personal protective equipment requirements and procedures
- apply cyanide measurement systems (e.g. Titrations)
- apply personal and co-worker safety requirements and procedures
- apply cyanide materials safety data sheets (MSDS)

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to safely handle, store and use cyanide within the gold mining industry:

- emergency procedures
- equipment safety requirements
- hazardous substances procedures and handling techniques, including understanding of:
- material safety data sheets (MSDSs) and their use
- Dangerous Goods requirements and procedures
- isolation procedures
- mine site safety requirements
- occupational health and safety procedures
- site safety procedures
- participative procedures for workplace management of OHS (e.g. consultation, safety representatives, committees, dispute resolution)
- International Cyanide Management Code

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the safe handling, storage and use of cyanide within the gold mining industry • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the handling, storage and use of cyanide within the gold mining industry • working with others to undertake and complete the safe handling, storing and using of cyanide within the gold mining industry that meets all of the required outcomes • consistent timely completion of the safe handling, storage and use of cyanide in the gold mining industry that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the safe handling, storing and using of cyanide in the gold mining industry

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • OHS legislation • manufacturer's guidelines and specifications • Australian Standards, including AS/NZS 4360 • industry guidelines and codes of practice • International Cyanide Management Code • safety and health management system • hazardous substances management, including material safety data sheets (MSDS)
Cyanide may include:	• sodium cyanide briquettes • flake calcium cyanide • liquid sodium cyanide • cyanide slurry solution
Mine site safe operating procedures may include:	• awareness and access to emergency exits • carrying out safety checks (e.g. checking HCN levels) • emergency procedures (e.g. Cyanide spills) • First Aid procedures • hazard identification and recognition procedures • work access permit • housekeeping standards • decontamination procedures • cyanide destruction procedures • cyanide disposal procedures • change management procedures • observing smoking restrictions at certain locations or times or during specific activities • observing site speed limits • occupational health, safety and environment procedures around equipment, vehicles and personnel • isolation and tagging procedures (e.g. out-of-service tags, danger tags, restrictive

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	operations tags) • use of barricades and guards • use of fire extinguishers • hazardous substances safety procedures, including use of material safety data sheets (MSDS) • use of two-way radios and site telephones • wearing personal protective equipment • control of and working in confined spaces • ensuring ventilation is operating • ensuring safety showers are operating • awareness of and access to escape ways • sign and barricade erection (including cleaning of signs)

Potential hazards, **risks and emergencies** may include:	• personal safety including cyanide or HCN exposure
	• plant emergency shut down in the event of a cyanide spill
	• environment (e.g. seepage, emissions, chemical spills, pollution, anything detrimental to fauna and flora)
	• changes, which may include:
	  • delivery of unknown materials
	  • broken down vehicles or equipment
	  • changes by suppliers
	  • changes of personnel

Personal protective equipment may include:	• eye protection (e.g. glasses) • protective clothing (e.g. gloves, safety boots, helmet, long sleeved shirt, trousers and disposable clothing) • chemical/gas detectors HCN • respiratory devices
Self rescue equipment may include:	• respiratory devices / breathing apparatus • oxygen therapy units

Unit Sector(s)

Processing

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPGP301A Conduct drying activities

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of drying activities in the metalliferous mining industry. It includes planning and preparing for drying activities, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for drying activities	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Communicate with other personnel using approved communication methods 1.5. Select ***drying method*** appropriate for work activities 1.6. Select personal protective equipment appropriate for work activities 1.7. Select appropriate type of ***auxiliary equipment*** for work activities 1.8. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.9. Identify, address and report potential risks and hazards 1.10. Identify, address and report ***environmental issues*** 1.11. Adhere to emergency procedures to ensure safety of personnel and ***plant*** 1.12. Use approved dust suppression and extraction methods 1.13. Ensure area is well ventilated before entry into work area, where required
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and completes start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. ***Monitor*** the drying process 3.2. Take and interpret data from equipment ***indicator readings*** to determine drying efficiency 3.3. Continuously inspect operations/plant and catchment areas/sumps to identify drying process defects and potential problems 3.4. Adjust equipment to approved operating parameters to ***optimise*** and maintain efficient drying and to meet product quality

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	targets 3.5. Take samples and conduct tests at all stages of process 3.6. Add reagents to approved operating parameters 3.7. Carry out minor maintenance to maintain condition of equipment 3.8. Complete all required documentation clearly, concisely and on time 3.9. Pass on end of shift information to oncoming shift
4. Conduct housekeeping activities	4.1. ***Clean plant and equipment*** to maintain condition of all equipment to ensure safe and efficient operations 4.2. Manage and report hazards to maintain a safe working environment
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown or isolate equipment based on process and safety requirements 5.2. Perform ***post shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct drying activities:

- apply legislative, organisation and site requirements and procedures for conducting drying activities
- diagnose faults
- identify and manage hazards
- handle hazardous goods
- interpret e reports
- lift (manual, cranes and loads)
- maintain records
- monitor operations
- report defects
- apply safe work practices
- troubleshoot
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct drying activities:

- breakdown procedures
- contaminant identification
- drying process (basic)
- emergency procedures
- environmental procedures
- equipment limitations and operating parameters
- equipment safety requirements
- hazardous goods procedures and consequences of spills and hazardous goods
- identifying repair requirements
- isolation procedures
- metallurgical and technical data (basic)
- occupational health and safety procedures
- operational procedures and checks
- pumping system and flow charts (pipeline and sprinkler systems)
- reagent types

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- sampling
- site procedures
- site safety requirements
- types of ores (basic)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting drying activities • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of drying activities • working with others to undertake and complete the conduct of drying activities that meets all of the required outcomes • consistent timely completion of drying activities that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of drying activities

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Drying methods may include:	• heat process (ambient) • air exchange • refrigerated drying
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• compressors • distribution control systems (DCS) • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses • PLC systems
Pre-start checks may include:	• availability of equipment (e.g. conveyor) • detection of conditions that are unusual • personnel availability • job requirements • levels • walk through plant
Environmental issues may include:	• Drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills

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	• waste management and disposal • water quality
Plant may include:	• dryers (spray, kiln, rotary kiln, flash fluid dryers) • bag houses • heat exchanger • burners • lines • gas train • vessels • conveyors • valves
Start-up procedures may include the inspection of:	• agitators • cameras and monitors • interlocks • distribution control system • launders • hydraulic system • pumping system • screen inspections • scuttling pumps • pipes and flanges • drive belts • valves • visual and audio warning devices and lights • suppression systems
Monitor the drying process may include the checking of:	• blockages and spillages • feed rates • mineral content • moisture levels • on stream analysis (OSA) • overloads • pressures • power draw • wear and tear • emission (e.g. cyanide) • levels
Indicator readings may measure:	• flow • current (e.g. agitators) • density • levels

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	• restrictions • air flows • pressure • speed (e.g. pumps) • unusual noises • vibrations • power • temperature • fuel flows • dust levels
The methods used to **optimise** the plant may include:	• quantity of reagents • oxygen levels
Clean plant and equipment may include:	• hosing with water • high pressure cleaning
Post-shutdown checks may include:	• checks similar to pre-start checks
Contaminants are anything other than the ore. Common contaminants may include:	• oil • fuel • gases • organic materials • moisture
Materials are wet may include:	• slurry • cake • crushed ore • air

Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPGP302A Monitor and operate auxiliary plant and equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the monitoring and operation of auxiliary plant and equipment in the metalliferous mining industry. It includes preparing for plant equipment monitoring and operation, carrying out plant and equipment inspections and checks, operating and monitoring plant and equipment, maintaining plant and equipment efficiency, and shutting down and/or isolating plant and equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for plant and equipment monitoring and operation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Establish and maintain communication with other personnel using approved communication methods 1.5. Select ***personal protective equipment*** appropriate for work activities 1.6. Carry out equipment ***pre-start checks*** 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Follow emergency procedures 1.10. Use dust suppression and extraction methods
2. Carry out plant and equipment inspections and checks	2.1. Check correct plant operation prior to start-up 2.2. Check condition of ***plant and equipment*** for fault, identify damaged and inoperable equipment and report to relevant personnel 2.3. Record check/inspection outcomes and hand over to oncoming shift personnel 2.4. Physically, continuously inspect plant, take ***equipment indicator readings*** and identify and rectify defects and potential problems
3. Operate and monitor plant and equipment	3.1. Carry out plant and equipment ***start-up checks and procedures*** according to plant/equipment configurations and system requirements 3.2. ***Monitor*** operating plant and equipment for correct, efficient performance 3.3. Changeover auxiliary/ancillary plant to meet operational and maintenance requirements 3.4. Interpret and respond to plant alarms, take remedial actions and notify appropriate personnel

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	3.5. Identify basic faults and adjustments and make repairs to running/operating plant where necessary to maintain plant performance 3.6. Complete all required documentation clearly, concisely and on time 3.7. Pass on end of shift information to oncoming shift
4. Maintain plant and equipment efficiency	4.1. Carry out plant and equipment ***maintenance*** 4.2. Check and adjust plant condition to maintain efficient operation 4.3. Clear pipeline and pumping system blockages 4.4. Maintain materials storage vessel levels to meet plant operating demands 4.5. ***Clean*** plant to maintain condition of all equipment and work area hygiene 4.6. Identify and report hazards 4.7. Take and test samples
5. Shutdown and/or isolate plant and equipment	5.1. Carry out plant and equipment shutdown procedures according to plant/equipment configurations, system or safety requirements 5.2. Isolate plant and equipment for maintenance and plant configuration purposes 5.3. Perform post shutdown or isolation checks 5.4. Provide support for maintenance personnel and activities 5.5. Pass on shift change-over details to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to monitor and operate auxiliary plant and equipment:

- apply legislative, organisation and site requirements and procedures for monitoring and operating auxiliary plant and equipment
- operate auxiliary equipment
- lift loads (manual handling, cranes and loads)
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to monitor and operate auxiliary plant and equipment:

- plant configuration and function
- auxiliary equipment configuration and function
- breakdown procedures
- emergency procedures
- troubleshooting techniques
- sampling and testing purpose and procedures
- plant and equipment limitations and operating parameters
- plant and equipment safety requirements
- isolation procedures
- metallurgical processes and effects on product
- occupational health and safety procedures
- operational procedures and checks
- site procedures
- site safety requirements
- environmental requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for monitoring and operating auxiliary plant and equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of auxiliary plant and equipment monitoring and operation • working with others to undertake and complete the monitoring and operation of auxiliary plant and equipment that meets all of the required outcomes • consistent timely completion of auxiliary plant and equipment monitoring and operation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the monitoring and operation of auxiliary plant and equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Personal Protective Equipment may include:	• rubber gloves • rubber boots • safety boots • goggles/face shield • PVC overalls and apron • heat jacket • spats • hearing protection • respirator • clean are supply equipment
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • job requirements • personnel availability • levels • communications
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off/spills • waste management and disposal • water quality

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Plant and equipment may include:	• distribution control system (DCS) • motors/pumps and pumping systems • hydraulic systems and equipment • conveyors and conveyor systems • compressors and compressed air systems • pipes and flanges • storage vessels/tanks • valves • heat exchangers • fans and guards • dampers • pulleys • lCUs • drive belts • compressors • burners • gas train • conveyors/conveyor systems • rollers • grates • thickener plant • hand and power tools • hoses (air and water) • scrubbers • gauges and meters • agitators • silos/bins • cranes • screens • feeders • sumps • limit switches
Equipment indicator readings may include:	• current • flow • levels • pressure • speed • unusual noises • vibrations
Start-up checks and procedures may include the inspection of:	• agitators • cameras and monitoring

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	• interlocks • distribution control system • launders • hydraulic systems • pumps and pumping systems • screen inspections • pipes and flanges • drive belts • valves • visual and audible warning devices and lights • suppression systems
Monitor may include:	• blockages and spillages • feed rates • overloads • pressures • power draw • wear and tear • emissions (e.g. cyanide) • levels • temperatures • moisture content • on-stream analysis (OSA) • filtering • corrosion
Maintenance may include:	• lubrication • minor adjustments to operational plant • temporary small repairs • cleaning plant, equipment and work area • fixing leaks • adjusting seals
Clean may refer to cleaning methods that may include:	• hosing with water • high pressure cleaning • manual removal of build-up • air spear • de-greasing • forced air • suction

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Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPHA201A Operate raw material feed systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of raw material feed systems in the metalliferous mining industry. It includes preparing for and delivering raw materials. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for delivery of raw materials	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Communicate with other personnel 1.5. Select ***personal protective equipment*** appropriate for work activities 1.6. Identify, address and report ***potential risks and hazards*** 1.7. Identify, address and report ***environmental issues*** 1.8. Conduct visual and physical inspection of mobile equipment and plant before operations
2. Deliver raw materials	2.1. Clear conveyor belts at the earliest opportunity when stopped in an emergency 2.2. Empty conveyor belts prior to stopping 2.3. Remove tramp metals from materials to prevent damage to equipment and conveyors 2.4. Convey materials to bunkers minimising spillage 2.5. Operate mobile and fixed equipment efficiently

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate raw material feed systems:

- apply legislative, organisation and site requirements and procedures for operating raw material feed systems
- reclaim materials
- store materials
- store/blend materials
- deal with hazards
- communicate within work group
- report faults and variances

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate raw material feed systems:

- precautions necessary for safe working
- system for accessing safe working procedures
- use of protective clothing and equipment
- operating procedures
- quality procedures
- reclaiming operation
- tramp metal detection and removal
- conveyor belt procedures
- dangers presented by specific plant and equipment
- report faults
- limits of authority
- team working practices
- minimising conflict
- information to be communicated, to whom and when
- requirements on job holder of quality systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating raw material feed systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of raw material feed systems operation • working with others to undertake and complete the operation of raw material feed systems that meets all of the required outcomes • consistent timely completion of raw material feed systems operation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate:
	  • working with others to undertake and complete the operation of raw material feed systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Personal protective equipment may include:	• helmet • eye/face protection • respiratory protection • gloves • hearing protection • safety footwear
Potential risks and hazards may include:	• rail and road movement • cranes • noise • wind borne dust • sharp objects • moving machinery • falling • falling objects • gases
Environmental issues may include:	• drainage • dust and fumes • emissions • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality

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Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPHA301A Conduct milling/grinding

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of milling/grinding in the metalliferous mining industry. It includes planning and preparing for milling/grinding processes, starting-up equipment in sequence, operating and monitoring equipment and lubrication systems, monitoring and controlling classification, charging the mill, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for milling/grinding process	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift change over details 1.4. Communicate with other personnel 1.5. Select ***personal protective equipment*** appropriate for work activities 1.6. Select appropriate type of auxiliary equipment for work activities 1.7. Perform equipment pre-start checks to ensure equipment is ready for operation 1.8. Identify, address and report ***potential risks and hazards*** 1.9. Identify, address and report ***environmental issues*** 1.10. Adhere to ***safe operating procedures*** 1.11. Adhere to emergency procedures 1.12. Use approved dust suppression and extraction methods 1.13. Ensure area is well ventilated
2. Start-up equipment in sequence	2.1. Carry out start-up procedures and completes start-up checks 2.2. Confirm plant is operational
3. Operate and monitor equipment and lubrication system	3.1. Read and interpret data from equipment indicators 3.2. Continuously inspect plant 3.3. Adjust equipment to optimise plant performance 3.4. Control feed to plant 3.5. Monitor reagent additions 3.6. Monitor lubrication system to ensure that oil and grease levels are maintained 3.7. Carry out operator level maintenance 3.8. Complete all required documentation, clearly, concisely and on time 3.9. Pass on end of shift information to oncoming shift

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4. Monitor and control classification	4.1. Check for density and/or size of ore according to specified parameters 4.2. Adjust and calibrate equipment where required to meet density requirements 4.3. Accurately sample and record density of product
5. Charge mill	5.1. Select grinding media type and quantity according to metallurgical requirements 5.2. Charge mill as required
6. Conduct housekeeping activities	6.1. Clean plant 6.2. Manage and report hazards
7. Shut down in sequence and/or isolate equipment	7.1. Clear ore from milling/grinding equipment before commencing shutdown 7.2. Shut down or isolate equipment based on process and safety requirements 7.3. Perform post shut down or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct milling/grinding:

- apply legislative, organisation and site requirements and procedures for conducting milling/grinding
- operate, maintain and clean equipment
- identify and manage hazards
- interpret reports
- apply lifting techniques (manual, cranes and loads)
- maintain records
- employ safe work practices
- use data control systems (DCS)
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct milling/grinding:

- contaminant identification
- cooling system
- emergency procedures
- environmental principles
- equipment processes, limitations and operating parameters
- equipment safety requirements
- grinding media
- hazardous goods procedures and consequences of spills
- isolation procedures
- lubrication system
- metallurgical and technical data
- milling circuit components and functions/milling principles
- operational procedures and checks
- milling and grinding safety requirements
- types of ores

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting milling/grinding • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of milling/grinding • working with others to undertake and complete the conduct of milling/grinding that meets all of the required outcomes • consistent timely completion of milling/grinding that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of milling/grinding

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Personal protective equipment may include:	• chemical/gas detectors • eye protection (e.g. glasses) • hearing protection (e.g. ear plugs) • protection from the elements (e.g. sun block) • protective clothing (e.g. gloves, safety boots, helmet, shin guards, long sleeved shirt and trousers)) • respiratory devices • safety harness when working at heights
Potential risks and hazards may include:	• personal safety (e.g. crush injuries, burns, slips, trips, falls, chemical exposure, fatigue) • plant (e.g. structural damage, emergency shut down) • environment (e.g. seepage, emissions, chemical spills, pollution, anything detrimental to fauna and flora)
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality
Safe operating procedures may	• adhering to all site procedures

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include:	• awareness and access to emergency exits • emergency procedures • First Aid procedures • hazard identification and recognition procedures • hot work procedures • observing electrical and mechanical procedures • observing right of way of heavy equipment • observing site speed limits • occupational health safety and environment procedures around equipment, vehicles and personnel • use of 2-way radio • use of barricades and guards • use of fire extinguishers • use of materials safety data sheets (MSDS) • tagging procedures (e.g. service tags, danger tags, restrictive operations tags) • use of respiratory devices • wearing equipment restraints • wearing personal protective equipment • working in confined spaces • use of materials safety data sheets • carrying out safety checks (e.g. safety showers and eye washes) • hold worker access permit

Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPHA302A Operate and monitor filter processes

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation and monitoring of filter processes in the metalliferous mining industry. It includes preparing for filtering processes, starting up equipment in sequence, operating and monitoring equipment, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for ***filtering*** process	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Communicate with other personnel 1.5. Check and test remote control and ***monitoring systems*** for correct operation 1.6. Select appropriate type of ***auxiliary equipment*** for work activities and check for availability 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Follow emergency procedures to ensure safety of personnel and plant 1.10. Use approved dust suppression and extraction methods 1.11. Ventilate work area before entry
2. Start-up equipment in sequence	2.1. Carry out ***start-up checks and procedures*** according to plant configurations and system requirements 2.2. Confirm plant readiness for operation
3. Operate and ***monitor*** equipment	3.1. Take and interpret data from ***indicator readings*** to determine ***filtering*** efficiency 3.2. Continuously monitor plant and identify defects and potential problems 3.3. Adjust equipment to approved operating parameters to optimise performance, maintain efficient filtering and to meet product quality targets 3.4. Control feed to equipment 3.5. Monitor moisture in cake and density of filtrate 3.6. Monitor ***cleaning*** processes 3.7. Monitor and maintain air systems to specified moisture parameters 3.8. Maintain cleanliness of pressure/vacuum

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	systems 3.9. Complete all required documentation clearly, concisely and on time 3.10. Pass on end of shift information to oncoming shift
4. Shutdown in sequence and/or isolate equipment	4.1. Clear slurry from filtering circuit after commencing shutdown 4.2. Check and clean filter chamber and changes failed *filter* components 4.3. Shutdown or isolate equipment based on process and safety requirements 4.4. Perform ***post shutdown*** or isolation checks 4.5. Pass on shift change-over details to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate and monitor filter processes:

- apply legislative, organisation and site requirements and procedures for operating and monitoring filter processes
- change filters
- identify hazards
- interpret reports,
- report defects
- apply safe work practices

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate and monitor filter processes:

- air systems plant and configuration
- contaminant identification
- emergency procedures
- environmental procedures
- filter plant configurations and functions
- filter plant operation
- plant and equipment limitations and operating parameters
- plant and equipment safety requirements
- filtering procedures
- hazardous goods procedures and consequences of spills
- troubleshooting techniques
- isolation procedures
- metallurgical and technical data (basic)
- OHS procedures
- operational procedures and checks
- site procedures
- site safety requirements
- ore characteristics
- confined space entry procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating and monitoring filter processes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of filter processes operation and monitoring • working with others to undertake and complete the operation and monitoring of filter processes that meets all of the required outcomes • consistent timely completion of filter processes operation and monitoring that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation and monitoring of filter processes

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Monitoring systems may include the checking of:	• air systems • blockages and spillages • feed rates • filters • levels of ponds and catchment areas • mineral content • overloads • power draw • pressures • temperatures • wear and tear
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• belt weighs • distribution control systems • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses (water and air) • pump systems
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off

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	• spills • waste management and disposal • water quality
Start-up checks and procedures may include:	• availability of equipment • detection of conditions that are unusual • job requirements • personnel availability • walk through plant • communications • air systems • cameras and monitors • checking interlocks • checking distribution control system (DCS) • chutes • display instruments, lights and gauges • equipment stop engine lights • filters • hydraulic system • isolations • lighting • suppression systems • valves
Indicator readings may include:	• current • flow • levels • pressure • time • speed • unusual noises • vibrations
Filtering may include:	• candle • drum • pressure • compression • leaf • hyperbaric
Cleaning methods may include:	• degreasing • forced air • hosing with water
Post-shutdown may include:	• actions similar to start-up checks and procedures

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Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPHA303A Operate agglomeration circuit

Modification History

Not applicable.

Unit Descriptor

This unit covers operating an agglomeration circuit in the metalliferous mining industry. It includes preparing for agglomeration process, starting up agglomeration circuit, operating and monitoring the agglomeration circuit, responding to contingencies, monitoring the quality of agglomerate, and shutting down and maintaining the agglomeration circuit.
Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for agglomeration process	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Check and test remote control and ***equipment*** for correct operation 1.4. Select appropriate type of ***auxiliary equipment*** for work activities including availability 1.5. Identify, address and report potential risks and hazards 1.6. Identify, address and report environmental issues 1.7. Follow emergency procedures to ensure safety of personnel and plant
2. Start-up agglomeration circuit	2.1. Carry out pre-start checks 2.2. Establish that all agglomeration circuit drives are set to remote and ***ready for operation*** 2.3. Ensure that all downstream equipment is operational and ready to receive the agglomerated product 2.4. Ensure that all feed circuits (including specific feed blend requirements) to the agglomeration circuit are available and ready to operate 2.5. Initiate plant operator sequence start
3. Operate and monitor agglomeration circuit	3.1. Read and interpret data from equipment indicators to determine agglomeration circuit efficiencies 3.2. Continuously monitor circuit to identify defects and potential problems 3.3. Adjust equipment within approved operating parameters to optimise performance, maintain efficient agglomeration and to meet product quality targets 3.4. Monitor and adjust the feed rate 3.5. Monitor and control the addition rate of ***binding agent***

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	3.6. Monitor and control the dosing rate of ***leaching solution*** 3.7. Monitor and control the dosing concentration of leaching solution 3.8. Monitor and adjust the drum speed ratio 3.9. Complete all required documentation clearly, concisely and on time 3.10. Pass on end of shift information to oncoming shift
4. Respond to contingencies	4.1. Respond to ***alarms*** 4.2. Clear circuit blockages in accordance with site procedures 4.3. Perform manual start-up of individual items of equipment 4.4. Report maintenance issues as required
5. Monitor quality of agglomerate	5.1. Carry out ***physical tests*** to check quality of agglomerate 5.2. Organise ***laboratory tests*** to check quality of agglomerate 5.3. Respond to test information
6. Shutdown and maintain of agglomeration circuit	6.1. Initiate circuit shutdown 6.2. Perform post shutdown checks 6.3. Isolate equipment 6.4. Clean agglomeration circuit in preparation for ***maintenance*** requirements 6.5. Operate agglomeration drum using local control 6.6. Operate automated lubrication system and perform operator maintenance as required

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate an agglomeration circuit:

- apply legislative, organisation and site requirements and procedures for operating agglomeration circuits
- comply with site safety and environmental requirements
- identify, control and report hazards
- identify and report equipment maintenance requirements
- access, interpret and apply technical and safety information
- interpret and apply survey information and plans
- operate relevant plant and machinery
- communicate and coordinate activities with others
- apply diagnostic / fault finding techniques
- operate relevant auxiliary equipment
- maintain appropriate records

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate an agglomeration circuit:

- operational safety requirements and equipment
- site environment requirements
- emergency procedures
- mine operational procedures
- agglomeration drum operations and components
- conveyor operations and components
- pump operations and components
- plant and equipment limitations and operating parameters
- conveyor, pump and agglomeration drum maintenance requirements
- isolation standards and equipment isolation procedures
- confined space entry procedures
- metallurgical and technical data (basic)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating an agglomeration circuit • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of an agglomeration circuit • working with others to undertake and complete the operating an agglomeration circuit that meets all of the required outcomes • consistent timely completion of operating an agglomeration circuit that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of an agglomeration circuit

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • government licences to operate • codes of practice • management plans • OHS policy • operational procedures • safe working procedures (or equivalent)
Equipment (feed or downstream) may include:	• crushing plants • feed conveyors • discharge conveyors • stacking circuit conveyors • stinger conveyors • agglomeration drum • leach solution delivery pumps • leach solution dosing pumps • binding agent delivery systems
Auxiliary equipment may include:	• mobile plant and equipment • lubrication systems • hydraulic equipment • sump pumps
Ready for operation includes:	• with no interlocks to prevent the start-up of equipment • with no safety devices activated • with no blockages • with no damage • in working order
Binding agent may include:	• cement

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	• hydrated lime • cement kiln dust (fly ash) • bentonite • silicates • high molecular flocculants • required to maintain the required pH of the product discharging the agglomeration circuit • a set ratio to feed ore to agglomeration circuit
Leaching solution may include:	• water • cyanide solution • sulphuric acid solution

Alarms may include:	• equipment drives such as:
	  • isolator alarms
	  • electrical faults
	  • thermal overloads
	  • variable Speed Drive faults
	  • temperature
	• safety devices such as:
	  • lanyards
	  • emergency stop buttons
	  • belt drift indicators
	  • belt rip indicators
	  • under speed sensors
	  • blocked chute indicators
	• dosing rate variations:
	  • high flow
	  • low flow
	  • flow control valve failure
	  • leak detection
	  • delivery pump fault
	• control system communication faults

Physical tests may include:	• strength • stability • structure • moisture content
Laboratory tests include tests for:	• agglomeration/percolation properties • submersion • column leach tests
Maintenance may include:	• isolation and tagging • restoration after isolation

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	• operational cleaning requirements • work carried out in accordance with approved maintenance manual or schedule

Unit Sector(s)

Processing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRE201A Conduct solvent extraction

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of solvent extraction in the metalliferous mining industry. It includes planning and preparing for solvent extraction, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for solvent extraction	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** 1.6. Perform equipment ***pre-start checks*** 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures 1.10. Use dust suppression and extraction methods 1.11. Ensure area is well ventilated
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and completes start-up checks according to plant configurations and system requirements 2.2. Confirm ***plant*** is operational
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** 3.2. Continuously inspect operations/plant and containment areas for defects and potential problems 3.3. Adjust equipment to approved operating parameters 3.4. Add reagents to approved operating parameters 3.5. Carry out operator level maintenance 3.6. Complete all required documentation 3.7. Pass on end of shift information to incoming shift
4. Conduct housekeeping activities	4.1. ***Clean plant*** 4.2. Identify, address and report hazards
5. Shutdown in sequence and/or	5.1. Shutdown or isolate equipment based on

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isolate equipment	process and safety requirements 5.2. Perform ***post shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct solvent extraction:

- apply legislative, organisation and site requirements and procedures for conducting solvent extraction
- identify and manage hazards
- handle hazardous substances
- interpret reports
- apply lifting (manual, cranes and loads)
- maintain records
- report defects
- employ safe work practices
- fault finding
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conducting solvent extraction:

- breakdown procedures
- contaminant identification
- solvent extraction process
- emergency procedures
- environmental principles
- equipment operating parameters
- equipment safety requirements
- hazardous substance procedures and consequences of spills
- isolation procedures
- metallurgical and technical data
- operational procedures and checks
- pumping system and flow charts (pipeline and sprinkler systems)
- reagent types
- sampling
- solvent extraction safety requirements
- types of ores

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- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting solvent extraction • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of solvent extraction • working with others to undertake and complete the solvent extraction in a way that meets all of the required outcomes • consistent timely completion of solvent extraction that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the solvent extraction

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• compressors • distribution control systems (DCS) • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses
Pre-start checks may include:	• availability of equipment (e.g. conveyor) • detection of conditions that are unusual • personnel availability • job requirements • levels • walk through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills

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	• waste management and disposal • water quality
Start-up procedures may include:	• cameras and monitors • interlocks • distribution control system • flash vessels • launders • heat exchangers • hydraulic system • pumping system • screen inspections • scuttling pumps • pipes and flanges • drive belts • valves • vessels • visual and audio warning devices and lights • suppression systems
Plant may include:	• heat exchanger • burners • lines • gas train • vessels • conveyors • valves
Indicator readings may measure:	• flow • current (e.g. agitators) • density • levels • restrictions • pressure • speed (e.g. pumps) • unusual noises • vibrations • power • temperature
Equipment and plant cleaning methods may include:	• hosing with water • high pressure cleaning
Monitoring the drying process may include the checking of:	• blockages and spillages • feed rates • mineral content

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	• moisture levels • on stream analysis (OSA) • overloads • pressures • power draw • temperature • wear and tear • emissions (e.g. cyanide) • levels • laboratory results
Post-shutdown checks are like pre-start checks	
The methods used to optimise the plant may include:	• quantity of reagents • flow • temperature • pressure • A/C ratio • condensate quality
Materials may include:	• slurry • steam
Contaminants are anything other than the ore. Common contaminants may include:	• oil • fuel • gases • organic materials • moisture

Unit Sector(s)

Refining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRE202A Prepare and carry out electrolytic cleaning process

Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation and carrying out of electrolytic cleaning processes in the metalliferous mining industry. It includes preparing for the electrolytic cleaning process, and conducting the electrolytic cleaning process. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for electrolytic cleaning process	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved ***communication*** methods 1.4. Select ***personal protective equipment*** appropriate for work activities 1.5. Identify, address and report potential risks and ***hazards*** 1.6. Identify, address and report ***environmental issues*** 1.7. Prepare tanks and scrubbing equipment 1.8. Prepare and set temperature and chemical composition of cleaning solution 1.9. Renew or replace terminals
2. Conduct electrolytic cleaning	2.1. Monitor solution during process 2.2. Monitor cleaning process according to specifications 2.3. Identify cleaning process end-point 2.4. Shutdown electrolysis according to specification

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to prepare and carry out electrolytic cleaning process:

- apply legislative, organisation and site requirements and procedures for preparing for and carrying out electrolytic cleaning processes
- reschedule materials to meet plant availability
- receive and deploy materials
- store scheduled materials
- facilitate smooth product flow
- communicate with work group, suppliers and customers
- deal with faults and variances

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to prepare and carry out electrolytic cleaning process:

- precautions necessary to ensure safety
- potential dangers inherent in specific plant and equipment
- safe working procedures and systems
- use of protective clothing and equipment
- handling of chemicals/dispatch of waste products
- storage and scheduling requirements for production
- plant requirements for various schedules
- service requirements and specifications
- manning and competence requirements
- fault finding, rectification and reporting
- materials specifications
- optimisation of processing
- standard operating procedures
- tolerances allowable in the quality system and when action should be taken
- production documentation requirements and procedures
- relevant quality assurance and inspection procedures and systems
- limits of authority
- teamwork practices and team building techniques
- minimising conflict and conflict resolution

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for preparing and carrying out electrolytic cleaning processes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of electrolytic cleaning processes • working with others to undertake and complete the electrolytic cleaning process in a way that meets all of the required outcomes • consistent timely completion of electrolytic cleaning processes that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the electrolytic cleaning process

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Personal protective equipment may include:	• helmet • eye/face protection • respiratory protection • heat resistant clothing/gloves • hearing protection • safety footwear
Hazards may include:	• rail and road movement • cranes • noise • wind borne dust • sharp objects • moving machinery • falling/falling objects
Environmental issues may include:	• drainage • dust and fumes/emissions • hazardous chemicals • noise • run-off/spills • waste management and disposal • water quality

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Unit Sector(s)

Refining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRE203A Prepare for sintering activities

Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation of sintering activities in the metalliferous mining industry. It includes preparing for sintering operations, discharging and storing raw materials, blending raw materials, and distributing raw materials in readiness for sintering. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for sintering operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Identify, address and report potential risks and ***hazards*** 1.6. Complete computer systems and equipment pre-start checks 1.7. Identify, address and report ***environmental issues*** 1.8. Check record and identify outstanding maintenance inspections and record identified defects
2. Discharge and store raw materials	2.1. Discharge materials from ***transportation*** minimising spillage and/or delays
3. Blend raw materials	3.1. Construct required bed size by bedding materials to specification 3.2. Maintain sufficient amount of materials to meet bed building requirements 3.3. Blend materials in specified sequence
4. Distribute raw materials in readiness for sintering	4.1. Suppress dust using appropriate method 4.2. Supply materials to required usage flow rates 4.3. Store materials ready for use in designated area 4.4. Accurately identify blended materials and transfer to designated area

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to prepare for sintering activities:

- apply legislative, organisation and site requirements and procedures for preparing for sintering activities
- bed materials
- communicate within work group
- discharge materials
- report faults and variances
- stock materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to prepare for sintering activities:

- blending procedures
- dangers presented by specified plant and equipment
- discharging methods
- information to be communicated, to whom and when
- limits of authority/minimising conflict
- operating procedures
- precautions necessary for safe working
- quality procedures
- report faults
- requirements on job holder of quality systems
- system for accessing safe working procedures
- team working practices
- transportation types
- use of protective clothing and equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for preparing for sintering activities • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of sintering activities preparation • working with others to undertake and complete the sintering activities preparation in a way that meets all of the required outcomes • consistent timely completion of sintering activities preparation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the sintering activities preparation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Hazards may include:	• rail and road movements • cranes • noise • wind borne dust • sharp objects • moving machinery • falling • falling objects
Environmental issues may include:	• drainage • dust and fumes • emissions • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality
Transportation may include:	• conveyor • truck

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Unit Sector(s)

Refining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRE204A Sinter materials

Modification History

Not applicable.

Unit Descriptor

This unit covers the sintering of materials in the metalliferous mining industry. It includes preparing materials for feeding into sinter strand, sintering materials, cooling and screening sinter and fines, and operating environmental controls. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare materials for feeding into sinter strand	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Add (reagents) to meet production targets and sintering specifications 1.3. ***Monitor*** and control moisture content of materials 1.4. Monitor and control material feed rate 1.5. Identify and remove ***feedstock material*** before processing begins
2. Sinter materials	2.1. Monitor and adjust correct suction rate throughout bed to ensure sintering is complete 2.2. Identify and separate materials not meeting material size to raw material mix or other specified location 2.3. Monitor and adjust temperature to maintain uniform distribution across the bed 2.4. Screen hot sinter where applicable 2.5. Check and confirm strand discharge chutes are working 2.6. Confirm roll feeder is clear of debris and build-up 2.7. Check and confirm condition of pallet seal and wind box to prevent leakage 2.8. Check and confirm fire bars and spade pins are intact to minimise fall through of material 2.9. Deposit blend across full width of strand 2.10. Operate at full bed depth and constant waste gas temperature
3. Cool and screen sinter and fines	3.1. Receive and assess material size according to hearth layer requirements 3.2. Maintain hopper levels ensuring contract feed to screening station 3.3. Crush oversize material from scalping screens 3.4. Monitor and cool sinter to the required temperature 3.5. Monitor cooler operations to maintain required temperature, minimise air leakage,

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	and meet cooling rate requirements 3.6. Monitor and maintain appropriate depth of sinter on cooling pallets
4. Operate environmental controls	4.1. Ensure ***environmental*** systems are operating correctly 4.2. Check wastes and emission collection meets operational compliance

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to sinter materials:

- apply legislative, organisation and site requirements and procedures for sintering materials
- discharging materials
- bed materials
- stock materials
- communicate within work group
- report faults and variances

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to sinter materials:

- precautions necessary for safe working
- system for accessing safe working procedures
- use of protective clothing and equipment
- sinter feedstock
- sinter yield
- sinter feedstock additions
- operating procedures
- quality procedures
- blend profile to give optimum strand conditions
- sinter techniques and production
- cooling requirements
- screening
- hearth layer requirements
- importance of correct pallet side walls
- reasons for maintaining maximum depth of sinter in cooler pallets
- cooler air leakage
- danger of high temperature sinter/pellets on conveyors
- importance of no over size material after final cold fines screen
- temperature distribution
- combustion requirements
- suction requirements
- processing of sinter and fines

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- effects of strand leakage's
- importance of correct strand disposition
- importance of roll feeder operation
- over size material
- hot screening
- dangers presented by specific plant and equipment
- report faults
- limits of authority
- team working practices
- minimising conflict
- information to be communicated, to whom and when
- requirements on job holder of quality systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for sintering materials • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of materials sintering • working with others to undertake and complete the materials sintering in a way that meets all of the required outcomes • consistent timely completion of materials sintering that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the materials sintering

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Monitoring the sintering process may include the checking of:	• blockages and spillages • feed rates • on stream analysis (OSA) • overloads • pressures • power draw • wear and tear • levels • waste gas
Feedstock materials may include:	• ore blend • limestone fines • return fires • burnt lime • water
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off

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	• spills • waste management and disposal • water quality
Plant may include:	• heat exchanger • burners • lines • conveyors • valves • roll feeder • drums (mixing, granulating) • feed bins
Hazards may include:	• rail and road movements • cranes • noise • wind borne dust • sharp objects • moving machinery • falling • falling objects

Unit Sector(s)

Refining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRE301A Conduct electrowinning/electrorefining operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of electrowinning/electrorefining in the metalliferous mining industry. It includes planning and preparing for electrowinning/electrorefining, monitoring electrowinning/electrorefining, pulling and stripping plates, shutting down in sequence and/or isolating equipment, and conducting housekeeping activities and returning cell to service. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for electrowinning/ electrorefining	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment **pre-start checks** 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures 1.10. Use approved dust suppression and extraction methods 1.11. Ensure area is well ventilated
2. Monitor electrowinning/ electrorefining	2.1. ***Monitor***, gather and interpret data from equipment indicators 2.2. Monitor and adjust solution volume, feed quality and rate of flow in cells 2.3. Monitor cooling system according to site procedures 2.4. Monitor and maintain temperature, voltage and amps. 2.5. Continuously monitor operations 2.6. Minimise and monitor emissions 2.7. Complete all required documentation 2.8. Pass on end of shift information to oncoming shift 2.9. Conduct cell inspections 2.10. Observe and follow electrical safety techniques
3. Pull and strip plates	3.1. Ensure that electrowinning/electrorefining systems are safe for plate removal 3.2. Pull and strip plates using appropriate equipment 3.3. Inspect electrodes and identify rejects

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	3.4. strip plates to site requirements 3.5. Stack and dispatch stripping products 3.6. Clean plates for reuse 3.7. Handle stripping products safely
4. Shutdown in sequence and/or isolate equipment	4.1. Shutdown or isolate equipment based on process and safety requirements 4.2. Perform ***post shutdown*** or isolation checks 4.3. Plan for shutdown/isolation and returning cells to service
5. Conduct housekeeping activities and return cell to service	5.1. ***Clean plant*** 5.2. Identify, address and report hazards 5.3. Maintain bus-bar cleanliness 5.4. Isolate cell and remove scale from anodes and cell according to site requirements 5.5. Dispose of scale in accordance with site procedures 5.6. Return cell to service in correct sequence

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct electrowinning/electrorefining operations:

- apply legislative, organisation and site requirements and procedures for conducting electrowinning/electrorefining operations
- carry out fault finding
- identify hazards
- handle hazardous substances
- interpret reports
- apply lifting techniques (manual, cranes and loads)
- maintain records
- report defects
- employ safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct electrowinning/electrorefining operations:

- breakdown procedures
- contaminant identification
- electrowinning/ electrorefining principles
- electrical hazards
- emergency procedures
- environmental principles
- equipment operating parameters
- equipment safety requirements
- hazardous substances procedures and consequences of spills
- isolation procedures
- metallurgical and technical data
- operational procedures and checks
- pumping system and flow charts (pipeline and sprinkler systems)
- reagent types
- sampling
- site procedures

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- electrowinning/ electrorefining safety requirements
- types of ores
- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting electrowinning/electrorefining operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of electrowinning/electrorefining operations • working with others to undertake and complete the electrowinning/electrorefining operations in a way that meets all of the required outcomes • consistent timely completion of electrowinning/electrorefining operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the electrowinning/electrorefining operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• compressors • distribution control systems (DCS) • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools
Pre-start checks may include:	• availability of equipment (e.g. conveyor or gantry) • detection of conditions that are unusual • personnel availability • job requirements • fluid levels • walk through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off/spills • waste management and disposal

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	• water quality • management of residues
Monitoring may include the checking of:	• solution levels • spillages and hot spots • flow rates • pressures • power draw • emission levels • reagent addition
Post-shutdown checks are like pre-start checks.	
Equipment and plant cleaning methods may include:	• digging
Plant may include:	• tanks • lines • pumps • piping • cells • plates • fixed stripping machines • monorails
Indicator readings may include:	• current flow • solvent density • restrictions • air flows • pressure • unusual noises • temperature
Start-up procedures may include:	• cameras and monitors • interlocks • distribution control system • pumping system • scuttling pumps • pipes and flanges • drive belts • valves • visual and audio warning devices and lights • suppression systems • cells and surround site

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Materials may include:	• slurry • solution • reagents

Unit Sector(s)

Refining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRE302A Conduct elution processes

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of elution processes in the metalliferous mining industry. It includes planning and preparing for the elution process, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for elution process	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures 1.10. Use dust suppression and extraction methods 1.11. Ensure area is well ventilated
2. Start-up equipment in sequence	2.1. Complete ***start-up checks*** according to ***plant*** configurations and system requirements 2.2. Confirm plant is operational 2.3. Prepare carbon regeneration kilns and heat exchanges according to site requirements 2.4. Prepare elution column for loading 2.5. Load elution column 2.6. Sample column for carbon content and measure level of carbon 2.7. Prepare circuit for start-up and starts circuit in sequence
3. Operate and monitor equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** 3.2. Continuously inspect operations/plant and containment areas 3.3. Adjust equipment to operating parameters 3.4. Operate pumps and valves to mix reagents 3.5. Add reagents to operating parameters according to site procedures 3.6. Carry out operator level maintenance

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	3.7. Complete all required documentation 3.8. Pass on end of shift information to incoming shift 3.9. Sample pregnant and barren solution 3.10. Return barren solution according to site procedures
4. Conduct housekeeping activities	4.1. ***Clean plant*** 4.2. Identify, address and report hazards
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown or isolate equipment based on process and safety requirements 5.2. Perform ***post shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct elution processes:

- apply legislative, organisation and site requirements and procedures for conducting elution processes
- control circuits
- fault finding
- hazard identification and management
- handle hazardous substances
- interpret reports
- apply lifting (manual, cranes and loads)
- maintain records
- report defects
- employ safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct elution processes:

- elution process principles
- circuit control systems
- breakdown procedures
- regeneration kiln operations
- heat exchanger application
- emergency procedures
- environmental principles
- equipment operating parameters
- equipment safety requirements
- hazardous substances procedures and consequences of spills
- isolation procedures
- metallurgical and technical data
- operational procedures and checks
- pumping system
- sampling
- elution safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting elution processes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of elution processes • working with others to undertake and complete the elution processes that meets all of the required outcomes • consistent timely completion of elution processes that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the elution processes

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• compressors • distribution control systems (DCS) • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • personnel availability • job requirements • walk through plant
Environmental issues may include:	• drainage • emissions • hazardous chemicals • noise • recycling • run-off/spills • waste management and disposal • water quality
Start-up procedures may include:	• cameras and monitors • distribution control system • pumping system

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	• pipes • valves • vessels • visual and audio warning devices and lights • suppression systems
Plant may include:	• elution columns • pumps • valves • reagent vessels • carbon regeneration kilns • heat exchanges
Indicator readings may include:	• flow/current • density • levels • restrictions • pressure • speed (e.g. pumps) • unusual noises • vibrations • power • temperature
Equipment and plant cleaning methods may include:	• hosing with water • high pressure cleaning
Post-shutdown checks are like pre-start checks.	
Monitoring the drying process may include the checking of:	• blockages and spillages • carbon content • gold content • on stream analysis (OSA) • overloads • power draw • temperature • wear and tear • emission • laboratory results
The methods used to optimise the plant may include:	• quantity of reagents • flow • temperature • pressure • current flow

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Materials may include:	• slurry • reagents

Unit Sector(s)

Refining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRE303A Conduct gold room operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of gold room operations in the metalliferous mining industry. It includes planning and preparing for gold room operations, starting up equipment in sequence, operating and monitoring smelting equipment, preparing electrowinning products for smelting, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for gold room operation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures 1.10. Use dust suppression and extraction methods 1.11. Ensure area is well ventilated
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and completes start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor smelting equipment	3.1. ***Read*** and interpret data from equipment ***indicators*** 3.2. Continuously inspect operations/plant and containment areas for defects and potential problems 3.3. Read and interpret analysis reports 3.4. Add reagents according to site procedures 3.5. Adjust equipment to operating parameters 3.6. Observe and follow electrical and/or gas safety techniques 3.7. Carry out operator level maintenance 3.8. Complete all required documentation 3.9. Pass on end of shift information to incoming shift 3.10. Adhere to site security procedures
4. Prepare electrowinning	4.1. Treat stripping products in preparation for

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products for smelting	smelting - fluxing and/or drying 4.2. Record all required information
5. Conduct housekeeping activities	5.1. ***Clean plant*** 5.2. Identify, address and report hazards 5.3. Dispose of waste in accordance with site procedures 5.4. Maintain records of gold room processes in accordance with site procedures
6. Shutdown in sequence and/or isolate equipment	6.1. Shutdown or isolate equipment based on process and safety requirements 6.2. Perform ***post shutdown***/isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct gold room operations:

- apply legislative, organisation and site requirements and procedures for gold room operations
- sample
- identify hazards
- handle hazardous substances
- apply lifting techniques (manual, cranes and loads)
- maintain records
- report defects
- employ safe work practices
- fault finding
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct gold room operations:

- breakdown procedures
- elution process
- smelting process
- use of fluxes
- record keeping
- handling requirements for gold concentrates
- security requirements for gold processing
- emergency procedures
- environmental principles
- equipment limitations and operating parameters
- equipment safety requirements
- hazardous substance procedures and consequences of spills
- identifying repair requirements
- isolation procedures
- metallurgical and technical data
- OHS procedures

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- specific operational procedures and checks
- pumping systems
- sampling
- gold room safety requirements
- types of ores
- the effects of wet and dry concentrates

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting gold room operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of gold room operations • working with others to undertake and complete the gold room operations in a way that meets all of the required outcomes • consistent timely completion of gold room operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the gold room operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• compressors • distribution control systems (DCS) • hand and power tools • sampling equipment • hoses
Pre-start checks may include:	• availability of equipment (e.g. cathodes) • detection of conditions that are unusual • personnel availability • job requirements • levels • walk through plant
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal

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	• water quality
Start-up procedures may include:	• cameras and monitors • electrowinning cells • cathodes • power control systems • distribution control system • pumping system • pipes and flanges • valves • vessels • visual and audio warning devices and lights • suppression systems
Indicator readings may include:	• flow • current • density • levels • restrictions • pressure • speed (e.g. pumps) • unusual noises • vibrations • power • temperature
Equipment and plant cleaning methods may include:	• hosing with water • high pressure cleaning
Post-shutdown checks are like pre-start checks	
Plant may include:	• furnaces • power control • reagent vessels and delivery systems • drying systems
Monitoring the electrowinning process may include the checking of:	• blockages and spillages • mineral content • moisture levels • overloads • pressures • power draw • temperature • wear and tear • emission (e.g. cyanide)

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	• levels • laboratory results
The methods used to optimise the plant may include:	• quantity of reagents • current flow • temperature • pressure
Materials may include:	• pregnant calcine from elution • reagents

Unit Sector(s)

Refining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRE304A Monitor casting quality

Modification History

Not applicable.

Unit Descriptor

This unit covers the monitoring of casting quality in the metalliferous mining industry. It includes preparing for operations, maintaining efficient operation of casting area, and controlling quality of castings. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Establish and maintain ***communications*** with other personnel 1.3. Select ***personal protective equipment*** appropriate for work activities 1.4. Identify, address and report potential risks and ***hazards*** 1.5. Identify, address and report ***environmental issues*** 1.6. Follow emergency procedures 1.7. Use approved dust suppression and extraction methods 1.8. Ventilate work area 1.9. Check tools and required equipment availability and checks for operational readiness 1.10. Set up equipment according to company standard work procedures
2. Maintain efficient operation of casting area	2.1. Carry out plant and equipment ***start-up checks*** and procedures according to plant/equipment configurations and system requirements 2.2. Control systems supplying ***air and water to the casting*** and quality inspection area 2.3. ***Clean*** and condition ***ladles and launders*** for safe, efficient casting to operating standard 2.4. ***Prepare ladle and launder*** for ***maintenance*** and/or repair as required 2.5. Maintain work area in a clean, safe condition
3. Control quality of castings	3.1. Carry out and record pre-start quality control equipment checks 3.2. Visually inspect castings in their mould for compliance with specification 3.3. Operate equipment to remove reject castings 3.4. Dress cooled castings to allow efficient refining

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	3.5. Batch and identify castings according to organisational requirements 3.6. Complete ***production documentation*** 3.7. Pass on shift change-over details to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to monitor casting quality:

- apply legislative, organisation and site requirements and procedures for monitoring casting quality
- fault find
- work with/handling high temperature materials
- operate, maintain and clean equipment
- identify hazards
- interpret reports,
- apply lifting techniques (manual, cranes and loads)
- monitor system/plant
- report defects
- control quality
- employ safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to monitor casting quality:

- casting plant construction components and operation
- characteristics of molten metal
- the ability to distinguish between:
- chemical (including combustion)
- instrument
- equipment (electrical/mechanical)
- ability to isolate problem to item of equipment
- hazards associated with hot molten metal
- safe working procedures with molten metal
- protective equipment for working with hot materials
- potential dangers inherent in specific plant and equipment
- safe working procedures and systems
- identification of reject castings
- storage and scheduling requirements for production
- service requirements and specifications
- fault finding, rectification and reporting

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- standard operating procedures
- tolerances allowable in the quality system and when action should be taken
- relevant quality assurance and inspection procedures and systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for monitoring casting quality • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of casting quality monitoring • working with others to undertake and complete the casting quality monitoring that meets all of the required outcomes • consistent timely completion of casting quality monitoring that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the casting quality monitoring

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Communications may include:	• PA system • warning sirens and lights • alarms • clear calls • phones
Personal protective equipment may include:	• helmet • safety footwear • hearing protection • gloves • eye/face protection • respiratory protection • heat resistant clothing
Hazards may include:	• rail and road movement • cranes • molten metal • hot materials • noise • air pollution • sharp objects • moving machinery • heights • falling objects

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	• gases • automatic equipment start-up
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality
Pre-start checks may include:	• identification and reporting of defective auxiliary equipment • work area hazards • chipping gun operation • sledgehammer • hoists • casting cooling tank plant and equipment
Air and water supplies to casting area may include:	• plant compressed air • instrument air • fresh (potable) water • process water • chilled water • fire supply water
Ladles and launders may be cleaned by:	• digging out • jack hammer • chipping gun
Preparation of ladles and launders includes:	• cleaning • patching • coating
Maintenance may include:	• lubrication • minor adjustments to operational plant • cleaning plant, equipment and work area • installation/removal of devices • patching
Production documentation may include:	• tonnages • quality • analysis/testing • identity • tracking

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Burners may be:	• diesel • natural gas
Equipment and plant cleaning methods may include:	• degreasing • forced air • hosing with water • suction
Fault and variances may occur in:	• product • plant • equipment

Unit Sector(s)

Refining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRM501A Implement, monitor, rectify and report on contracts

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation, monitoring, rectifying and reporting on contracts in the resources and infrastructure industries. It includes implementation, monitoring and reporting administrative procedures, monitoring contract time frame and specifications, resolving contractual disputes and implementing contract completion. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Implement, monitor and report administrative procedures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Implement ***contract administration*** procedures for reviewing ***contract performance*** against performance criteria 1.3. Implement procedures for monitoring and rectifying performance 1.4. Develop and implement procedures for adjusting performance where performance does not meet contractual requirements
2. Monitor contract time frame and specifications	2.1. Undertake regular inspection of contract services to ensure compliance with contract specifications 2.2. Identify and document variations between the specified scope of services and the contract, and notify relevant personnel 2.3. Carry out ***testing*** of services in progress by the contractor in accordance with legislative, regulation and worksite requirements
3. Resolve contractual disputes	3.1. Investigate disagreements to identify cause and validity 3.2. Negotiate and agree terms of resolution 3.3. Follow contracted prescriptions for dispute resolution 3.4. Seek specified advice to resolve disputes 3.5. Seek appropriate technical/legal advice to clarify dispute issues
4. Implement contract completion	4.1. Review ***contract conditions*** and responsibilities with appropriate personnel to ensure satisfactory completion 4.2. Report contract completion to appropriate personnel 4.3. Evaluate contract performance against agreed benchmarks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to implement, monitor, rectify and report on contracts:

- apply legislative, organisation and site requirements and procedures for implementing, monitoring, rectifying and reporting on contracts
- access, interpret and apply technical information and briefings to other staff
- apply the principles of contract management
- assess the risks and the hazards attached to contract management
- develop procedures appropriate to site operations for management of contracts
- plan and coordinate work
- identify training needs related to contract management
- interpret and apply contract specifications
- conduct testing of contracted services and products

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to implement, monitor, rectify and report on contracts:

- legislative and statutory requirements and the instructions relating to contract maintenance
- site operation procedures
- site design relating to contracted services
- contract management requirements
- risk management procedures
- inspection and testing of contracted services / products
- site reporting procedures
- review processes and techniques
- knowledge of contract design criteria
- training programs
- computer based systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for implementing, monitoring, rectifying and reporting on contracts • implementation of procedures and techniques for the safe, effective and efficient implementation, monitoring, rectification and reporting on contracts • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of processes to implement, monitor, rectify and report on contracts that best meet the required outcomes • working with others to undertake and complete the implementation, monitoring, rectification and reporting on contracts • consistent successful implementation, monitoring, rectification and reporting on contracts
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection

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	and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge in undertaking the implementation, monitoring, rectification and reporting on contracts
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of processes for implementation, monitoring, rectification and reporting on contracts that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:

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	• working with others to undertake and complete the implementation, monitoring, rectification and reporting on contracts • provision of clear and timely required support and advice on the implementation, monitoring, rectification and reporting on contracts
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Contracts may be for :	• products • maintenance contracts • supply contract • cleaning contracts • waste removal contracts • plant and equipment commissioning and decommissioning contracts • equipment supply contracts • other worksite requirements
Administration may include:	• supervision • management • monitoring • overseeing
Contract performance is evaluated in terms of:	• adherence to time lines • costs • progress towards objectives • adherence to quality standards • occupational health and safety standards
Testing may include:	• sampling • routine checks • audit • observation • meetings • occupational health and safety checks
Contract conditions may include:	• tender documentation • maintenance plans

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	• defects liability

Unit Sector(s)

Project Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRO201A Conduct crushing operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of crushing operations in the mining and extractive industries. It includes the planning and preparation for operations; operating the plant; and carrying out post operational procedures.

Application of the Unit

Crushing plants can be fixed, skid, wheeled or track mounted, and electrical or diesel powered. This unit is appropriate for those working in processing plant operator roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conduct of crushing operations 1.2. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations 1.3. Select and use ***personal protective equipment*** appropriate for work activities 1.4. Ensure area is well ventilated before entry 1.5. ***Inspect and prepare work area and equipment in coordination with others*** 1.6. Prepare a work plan 1.7. Select appropriate type of ***auxiliary equipment*** for work activities 1.8. Resolve coordination requirements with others at the site prior to commencing and during work activities
2. Operate the crushing plant	2.1. Carry out ***pre-start***, ***start-up***, ***run and shutdown procedures*** 2.2. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.3. Use dust suppression and extraction methods 2.4. Conduct, control and ***monitor*** operations within the equipment limitations, maintaining crushing efficiency and effectiveness 2.5. Act on or report performance monitoring systems and alarms 2.6. Recognise and respond to ***hazardous and emergency situations*** 2.7. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the allocated equipment
3. Carry out post-operational procedures	3.1. Inspect fault-find and report faults 3.2. Carry out ***operational maintenance***, ***servicing***, ***lubricating and housekeeping*** tasks

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	3.3. Maintain process and pass on records and reports

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct crushing operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- applying the plant operating procedures
- apply production and equipment records maintenance requirements
- apply diagnostic techniques
- use relevant hand and power tools
- work wearing personal protective equipment
- apply hazard identification and management requirements and procedures
- complete forms
- apply hazardous goods handling techniques and management
- interpret reports
- use lifting techniques (manual, cranes and loads)
- identify and report defects
- apply procedures for working at heights and depths
- apply work orders/purchase requisition preparation requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct crushing operations:

- site hazard identification and response procedures
- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and procedures
- site quality requirements
- site communication procedures
- site product characteristics
- site operational procedures
- plant pre-start, start-up, operating and shutdown procedures and techniques
- plant components functions, characteristics, technical capability and limitations
- plant breakdown procedures
- plant isolation procedures

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- site record keeping requirements
- site confine space work procedures
- site personal protective equipment requirements
- contaminant identification
- emergency procedures
- crusher components
- crushing principles
- hazardous goods procedures and consequences of spills
- repair requirements
- mobile equipment operation
- computer basic techniques
- monitoring and control systems
- spillage procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting crushing operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of crushing operations • working with others to undertake and complete crushing operations that meet all of the required outcomes • consistent timely completion of crushing operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete crushing operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may come from briefings, handovers, and work orders and may include:	• product details • nature and scope of tasks • achievement targets • operational conditions • geological data • site survey data • site layout and out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Personal protective equipment may include:	• chemical/gas detectors • eye protection (e.g. glasses) • hearing protection (e.g. ear plugs) • protection from the elements (e.g. sun block) • protective clothing (e.g. gloves, safety boots, helmet, shin guards, long sleeved shirt and trousers)) • respiratory devices • safety harness when working at heights
Inspect and prepare work area may include:	• identification of hazards • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades, posting of signs and

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	following of security procedures • selection of appropriate equipment to ensure personnel safety and protection • determination of appropriate path of movement for equipment • floor, pad, access roads, ramps and bench requirements
Coordination with others may include with:	• yard persons • laboratory personnel • mobile plant operators • maintenance personnel
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• gantry cranes and attachments • hand and power tools • hoses (water and air) • mobile equipment • flexi pumps • air operated tools • boulder buster
Pre-start and start-up procedures may include:	• walk around check of the plant • checking and toping up fluid levels (including fuel) • lubrication • inspection of attachments to ensure security and identify defects • instrument and control lever checks • reporting defects and damage • follow prescribed start-up sequence • confirm plant is operational • checking interlocks • check for tags • cameras and monitors • monitoring and control systems • drive belts • isolations • chutes • conveyor components • pipe and flanges • pumping system • water systems • hydraulic system • lighting • suppression system

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	• visual and audio warning devices and lights • valves
Shutdown procedures may include:	• following prescribed shutdown sequence • securing equipment
Operating techniques may include:	• feed control • crusher adjustment • working safely around other machines and personnel
Changing work conditions may include variations in:	• rock types • feed grading • feed contamination • weather conditions • day and night
Monitoring may include the checking of:	• blockages and spillages • current draw • detecting noises and smells • flow rates • missing components • oil leaks • air flows • pressures • feed rates • wear and tear • contaminants, e.g.: oil, plastic, timber, misfire explosives, metal (e.g. bucket teeth etc)
Hazardous and emergency situations may include:	• personal safety (e.g. crush injuries, burns, slips, trips, falls, chemical exposure, fatigue) • plant (e.g. structural damage, emergency shutdown) • environment (e.g. seepage, emissions, chemical spills, pollution, anything detrimental to fauna and flora) • confined spaces • working alone • personal injury • unplanned shutdown • fire • electrical • dust • noise • explosive devices • reagents and their mixing procedures

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	(metalliferous mining only)
Operator service, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• scheduled servicing • changing wear components • greasing • equipment adjustments • cleaning • disposal of environmentally sensitive fluids and materials • application of chemical and fuel safety measures

Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRO202A Conduct screening and conveying operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting screening and conveying operations in metalliferous mining and extractive industries. It includes the planning and preparing for operations, conducting screening plant operations and carrying out post operational procedures.

Application of the Unit

Screening and conveying operations can be conducted with fixed, mobile or portable plants. This unit is appropriate for those working in operational roles, at worksites within:

- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting screening and conveying operations 1.2. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations 1.3. ***Inspect and prepare work area*** in ***coordination with others*** to work requirements and legislative, site and manufacturer's requirements and procedures
2. Operate the screening plant	2.1. Resolve coordination requirements with others at the site prior to commencing and during work activities 2.2. Carry out ***pre-start***, ***start-up and shutdown procedures*** 2.3. ***Relocate plant*** (if applicable) 2.4. ***Prepare plant for operation*** in accordance with work requirements 2.5. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.6. Conduct, control and monitor operations within the equipment limitations, maintaining screening efficiency an effectiveness 2.7. Act on or report monitoring systems and alarms 2.8. Recognise and respond to ***hazardous and emergency situations*** 2.9. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the allocated equipment.
3. Carry out post-operational procedures	3.1. Inspect, fault find and report 3.2. Carry out ***operational maintenance***, ***servicing***, ***lubricating and housekeeping tasks*** 3.3. Maintain, process and pass on records and reports

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct screening and conveying operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- applying the plant operating procedures
- apply production and equipment records maintenance requirements
- apply diagnostic techniques
- use relevant hand tools
- work wearing personal protective equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct screening and conveying operations:

- site hazard identification and response procedures
- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements
- site communication procedures
- site product characteristics
- site operational procedures
- plant pre-start, start-up, operating and shutdown procedures and techniques
- plant components functions, characteristics, technical capability and limitations
- plant breakdown procedures
- plant isolation procedures
- site record keeping requirements
- site confine space work procedures
- site personal protective equipment requirements
- contaminant identification

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conducting of screening and conveying operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of screening and conveying operations • working with others to undertake and complete screening and conveying operations that meet all of the required outcomes • consistent timely completion of screening and conveying operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the screening and conveying operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological may include:	• rock type and characteristics • faults and joints • water tables or other water sources
Survey data may include:	• floor heights • bench widths • grades
Work requirements may come from briefings, handovers, and work orders and may include:	• product details • nature and scope of tasks • achievement targets • operational conditions • geological data • site survey data • site layout and out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Inspect and prepare work area may include:	• identification of hazards • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection

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	• determination of appropriate path of movement for equipment • floor, pad, access roads, ramps and bench requirements
Coordination with others may include:	• yard persons • laboratory personnel • mobile plant operators • maintenance personnel
Pre-start, **start-up and shutdown procedures** may include:	• walk around check of the plant • checking and toping up fluid levels (including fuel) • lubrication • inspection of attachments to ensure security and identify defects • instrument and control lever checks • reporting defects and damage • follow prescribed start-up sequence • confirm plant is operational • following prescribed shutdown sequence • securing equipment
Relocate plant may include:	• dismantling • packing up • assisting in loading onto transport • hitching to plant for towing
Prepare plant for operation may include:	• assisting in unloading from transport • unpacking and assembling • fitting, adjusting and tracking belts • stabilising the plant
Operating technique may include:	• feed control • working safely around other machines and personnel
Changing work conditions may include:	• material types • feed grading • feed contamination • weather conditions • day and night
Hazardous and emergency situations may include:	• confined spaces • working alone • personal injury • unplanned shutdown • environmental

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	• chemical • fire • electrical • dust • noise
Operational maintenance, **servicing**, **lubricating and housekeeping tasks** may include:	• scheduled servicing • changing wear components • greasing • equipment adjustments • cleaning • disposal of environmentally sensitive fluids and materials • application of chemical and fuel safety measures

Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRO203A Operate programmable logic control systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of programmable logic controllers (PLCs) in extractive industries. It includes the preparation for and the operation and monitoring of operations using programmable logic controllers (PLCs).

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the operation of programmable logic controllers 1.2. Identify and apply the ***functions of the PLC*** in accordance with site procedures and instructions 1.3. Identify and locate the plant's equipment by name, number/code and function
2. Monitor and control operations	2.1. Carry out ***pre-start***, ***start-up and shutdown*** of the plant completely or partially in the sequence necessary to avoid plant or equipment damage or injury to personnel 2.2. ***Monitor*** and ***control*** operations within the equipment limitations, maintaining plant efficiency and effectiveness 2.3. Act on or report monitoring systems and alarms 2.4. Recognise and respond to ***hazardous and emergency situations*** 2.5. Maintain, process and pass on records and reports

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to operate programmable logic controllers (PLCs):

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- applying the plant operating procedures
- apply production and equipment records maintenance requirements
- apply diagnostic techniques
- apply keyboard skills
- use relevant hand tools
- work wearing personal protective equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to operate programmable logic controllers (PLCs):

- site hazard identification and response procedures
- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements
- site communication procedures
- site product characteristics
- site operational procedures
- process control pre-start, start-up, operating and shutdown procedures and techniques
- plant components functions, characteristics, technical capability and limitations
- process control breakdown procedures
- plant isolation procedures
- process control system corrective procedures
- site record keeping requirements
- site confine space work procedures
- site personal protective equipment requirements
- contaminant identification

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the operation of programmable logic controllers (PLCs) • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the operation of programmable logic controllers (PLCs) • working with others to undertake and complete the operation of programmable logic controllers (PLCs) that meets all of the required outcomes • consistent timely completion of the operation of programmable logic controllers (PLCs) that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of programmable logic controllers (PLCs)

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Functions of the PLC may include:	• control levels • densities • torque • pressures • sequence of operations • alarms • production records • motor amps • interlocks
Pre-start and start-up procedures may include:	• walk around check of the plant • instrument and control lever checks • reporting defects and damage • follow prescribed start-up sequence • confirm plant is operational
Shutdown procedures may include:	• following prescribed shutdown sequence • securing equipment
Monitoring may be by:	• computer screen • dials and gauges • lights • closed circuit TV • alarms
Control may be made by:	• keyboard input • switches and buttons • dials and gauges

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Hazardous and emergency situations may include:	• confined spaces • working alone • personal injury • unplanned shutdown • environmental • chemical • fire • electrical • dust • noise

Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRO204A Bulk package and store product

Modification History

Not applicable.

Unit Descriptor

This unit covers the bulk packaging and storage of the product in metalliferous mining industry. It includes the planning and preparing for operations, starting the equipment sequence, packaging and storing product, shutting down equipment and conducting housekeeping duties.

Application of the Unit

This unit applies to general and bulk packaging operations.
This unit is appropriate for those working in a operational roles, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for packaging	1.1. Access, interpret and apply ***compliance documentation*** relevant to the bulk packaging and storage of the product 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel and plant 1.10. Use approved dust suppression and extraction methods 1.11. Ensure area is well ventilated before entry into work area 1.12. Prepare site for positioning of any mobile equipment used for packaging operations 1.13. Position and stabilise any mobile equipment used according to work plan 1.14. Check condition of packaging meeting work requirements
2. Start-up equipment in sequence	2.1. Carry out ***start-up procedures*** and complete start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational within specifications
3. Package product	3.1. Read and interpret data from equipment indicators to determine packaging efficiency 3.2. Continuously inspect plant and identify operational defects and potential problems

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	3.3. Adjust equipment to optimise performance 3.4. Control feed to packaging unit 3.5. Take samples of ***product*** 3.6. Seal and accurately ***label package*** to ensure *product* is secured during transit 3.7. Prevent unauthorised entry to personnel and maintain security of packaging area 3.8. Complete all required documentation clearly, concisely and on time 3.9. Pass on end of shift information to oncoming shift
4. Store product	4.1. Store product in an ***approved location*** and secure environment 4.2. Position and brace packaged product according to transport requirements
5. Conduct housekeeping activities	5.1. ***Clean*** equipment to maintain condition of equipment and ensure safe and efficient operations 5.2. Clean and store ***auxiliary service*** equipment 5.3. Manage and report hazards to maintain a safe working environment
6. Shutdown in sequence and/or isolate equipment	6.1. Perform post shutdown or isolation checks 6.2. Shutdown or isolate equipment based on process and safety requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to bulk package and store product:

- apply legislative, organisation and site requirements and procedures
- apply hazard identification procedures
- apply operations monitoring requirements and procedures
- use hand and power tools
- apply procedures for working at heights

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to bulk package and store product:

- breakdown procedures
- bulk packaging methods
- contaminant identification
- emergency procedures
- environmental procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- hauling procedures (mobile)
- hazardous good handling techniques
- hazardous goods procedures and consequences of spills
- isolation procedures
- lifting techniques (manual, cranes and loads)
- loading procedures
- metallurgical and technical data (basic)
- night and day working procedures
- OHS procedures
- operational procedures and checks
- packaging requirements
- road rules (mobile)
- security procedures
- site procedures
- site safety requirements

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- storage requirements and procedures
- towing procedures (mobile)
- types of ores (basic)
- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the bulk packaging and storage of product • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the bulk packaging and storage of product • working with others to undertake and complete the bulk packaging and storage of product that meets all of the required outcomes • consistent timely completion of the bulk packaging and storage of product that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the bulk packaging and storage of product

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• hand and power tools • hoses (water and air) • mobile equipment
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • fluid levels • job requirements • personnel availability • walk through plant
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
Start-up procedures may include:	• checks distribution control system (DCS) • chutes • display instruments and gauges

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	• equipment stop engine lights • isolations • lights • material transport system for condition/tracking • pumping system • remote systems • visual and audio warning devices and lights • water spray systems
Product may include:	• concentrate (e.g. iron ore, arsenic) • refined product (e.g. gold bars)
Label package may include:	• number • safety warnings
Approved location may include:	• cell • concentrate pad • covered with tarp • safe • shipping container • silo/shed • strong box • warehouse
Clean may include:	• degreasing • forced air • high pressure • hosing with water • suction
Auxiliary service equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• hand and power tools • hoses (water and air) • mobile equipment

Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIPRO205A Conduct blending plant operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of blending plant operations in the metalliferous mining and extractive industries. It includes: the planning and preparation for operations; operating the plant; and carrying out post operational procedures.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conducting of blending plant operations 1.2. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations 1.3. ***Inspect and prepare work area in coordination with others*** 1.4. Resolve coordination requirements with others at the site prior to commencing and during work activities
2. Operate the blending plant	2.1. Carry out ***pre-start***, ***start-up***, ***run and shutdown procedures*** 2.2. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.3. Conduct, control and monitor operations within the equipment limitations, maintaining blending efficiency and effectiveness 2.4. Act on or report performance monitoring systems and alarms 2.5. Recognise and respond to ***hazardous and emergency situations*** 2.6. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the allocated equipment
3. Carry out post-operational procedures	3.1. Inspect, fault find and report faults 3.2. Carry out ***operational maintenance***, ***servicing***, ***lubricating and housekeeping tasks*** 3.3. Maintain, process and pass on records and reports

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct blending plant operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- applying the plant operating procedures
- apply production and equipment records maintenance requirements
- apply diagnostic techniques
- use relevant hand tools
- apply procedures for the disposal of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- work wearing personal protective equipment
- work alone or as part of a team

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct blending plant operations:

- site hazard identification and response procedures
- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements
- site communication procedures
- site product characteristics
- site operational procedures
- plant pre-start, start-up, operating and shutdown procedures and techniques
- plant components functions, characteristics, technical capability and limitations
- plant breakdown procedures
- plant isolation procedures
- site record keeping requirements
- site confine space work procedures
- site personal protective equipment requirements
- contaminant identification

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting blending plant operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of blending plant operations • working with others to undertake and complete the blending plant operations that meets all of the required outcomes • consistent timely completion of blending plant operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace context. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the blending plant operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may come from briefings, handovers, and work orders and may include:	• product details • nature and scope of tasks • plant configuration • stockpiling requirements • achievement targets • operational conditions • site layout and out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Inspect and prepare work area may include:	• identification of hazards • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection • cleaning out bins • stockpile floor and ramps requirements
Coordination with others may include with:	• yard persons • laboratory personnel • processing plant operators • mobile plant operators

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	• maintenance personnel • customer representatives
Pre-start and start-up procedures may include:	• walk around check of the plant • checking and toping up fluid levels (including fuel) • lubrication/greasing • inspection of attachments to ensure security and identify defects • instrument and control lever checks • reporting defects and damage • follow prescribed start-up sequence • confirm plant is operational
Shutdown procedures may include:	• following prescribed shutdown sequence • securing equipment • emergency shutdown
Operating techniques may include:	• feed control adjustments • working safely around other machines and personnel • moisture control
Changing work conditions may include variations in:	• material types • feed grading • feed contamination • weather conditions • day and night
Hazardous and emergency situations may include:	• confined spaces • working alone • personal injury • unplanned/emergency shutdown • environmental • chemical • fire (plant and surrounds) • dust, noise and electrical
Operator service, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• scheduled servicing • changing wear components • greasing • equipment adjustments • cleaning

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Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRO301C Conduct crushing and screening plant operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of crushing and screening plant operations in the mining and extractive industries. It includes: planning and preparation for operations, operating the plant, and carrying out post-operational procedures.

Application of the Unit

This unit is appropriate for those working in processing plant operator roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conduct of crushing and screening plant operations 1.2. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations 1.3. Select and use ***personal protective equipment*** appropriate for work activities 1.4. Ensure area is well ventilated before entry 1.5. ***Inspect and prepare work area and equipment in coordination with others*** 1.6. Prepare a work plan according to site procedures 1.7. Select appropriate type of auxiliary equipment for work activities 1.8. Resolve coordination requirements with others at the site prior to commencing and during work activities
2. Operate the crushing and screening plant	2.1. Carry out ***pre-start***, ***start-up***, ***run and shutdown procedures*** 2.2. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.3. Use dust suppression and extraction methods 2.4. Conduct, control and monitor operations within the equipment limitations, maintaining crushing and screening efficiency and effectiveness 2.5. Act on or report performance monitoring systems and alarms 2.6. Recognise and respond to ***hazardous and emergency situations*** 2.7. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the allocated equipment
3. Carry out post-operational procedures	3.1. Inspect, fault-find and report faults 3.2. Carry out ***operational maintenance***, ***servicing***, ***lubricating and housekeeping***

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	tasks 3.3. Maintain, process and pass on records and reports

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct crushing and screening plant operations: • apply legislative, organisation and site requirements and procedures • apply operational safety requirements • access, interpret and apply technical information • apply plant operating procedures • apply production and equipment records maintenance requirements • apply diagnostic techniques • use relevant hand and power tools • apply procedures for the disposal of environmentally sensitive fluids and materials • apply chemical and hydrocarbon safety measures • work wearing personal protective equipment • apply particle size assessment techniques • apply operation, maintenance and cleaning techniques • apply hazard identification and management procedures • apply hazardous materials handling procedures • apply defect identification techniques and reporting requirements • interpret reports • apply lifting techniques (manual, cranes and loads) • apply operations monitoring procedures • applying safe work practices • apply procedures for working at heights
Required knowledge
Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct crushing and screening plant operations: • site hazard identification and response procedures • site risk control procedures • site and equipment health and safety procedures • site environmental requirements and constraints • site quality requirements • site communication procedures • site product characteristics • site layout and plans • site operational procedures • plant pre-start, start-up, operating and shutdown procedures and techniques

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- plant components functions, characteristics, technical capability and limitations
- plant breakdown procedures
- plant isolation procedures
- site record keeping requirements
- site confine space work procedures
- site personal protective equipment requirements
- contaminant identification

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting crushing and screening plant operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of crushing and screening plant operations • working with others to undertake and complete crushing and screening plant operations that meets all of the required outcomes • consistent timely completion of crushing and screening plant operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills,

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	task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the crushing and screening plant operations

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may come from briefings, handovers, and work orders and may include:	• product details • nature and scope of tasks • achievement targets • operational conditions • plant configuration • site layout and out of bounds areas • stockpile details • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Personal protective equipment may include:	• chemical/gas detectors • eye protection (e.g. glasses) • hearing protection (e.g. ear plugs) • protection from the elements (e.g. sun block) • protective clothing (e.g. gloves, safety boots, helmet, shin guards, long sleeved shirt and trousers) • respiratory devices • safety harness when working at heights
Inspect and prepare work area and equipment may include:	• stockpile areas/product bins • identification of hazards • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by:

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	• erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection • stabilising plant • positioning plant
Coordination with others may include with:	• yard persons • laboratory personnel • mobile plant operators • maintenance personnel
Pre-start and start-up procedures may include:	• walk around check of the plant • checking and toping up fluid levels (including fuel) • lubrication/greasing • inspection of attachments to ensure security and identify defects • instrument and control lever checks, and • reporting defects and damage • follow prescribed start-up sequence • confirm plant is operational
Shutdown procedures may include:	• following prescribed shutdown sequence • securing equipment • emergency
Operating techniques may include:	• feed control adjustments • crusher adjustment • working safely around other machines and personnel
Changing work conditions may include variations in:	• rock types • feed grading and contamination • weather conditions • day and night

Hazardous and emergency situations may include:	• confined spaces
	• working alone
	• personal injury, e.g.
	  • crush injuries
	  • burns
	  • slips
	  • trips
	  • falls
	  • chemical exposure
	  • fatigue
	• plant, e.g.

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	• structural damage • emergency shutdown • unplanned shutdown • environmental e.g. • seepage • emissions • chemical spills • pollution • anything detrimental to fauna and flora • fire • dust • noise • electrical
Operator service, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• scheduled servicing • changing wear components • greasing • equipment adjustments • cleaning

Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRO302A Perform process control room operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the performance process control room operations in the mining and extractive industries. It includes: planning and preparing for operations; performing start-up operations; monitoring and managing operations; conducting housekeeping activities; shutting down in sequence and/or isolating plant and equipment.

Application of the Unit

This unit is appropriate for those working in processing plant operator roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the performance process control room operations 1.2. Receive, interpret and clarify shift changeover details 1.3. Establish and maintain communications with other ***personnel*** using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Identify, address and report potential risks and hazards 1.6. Complete computer systems and ***equipment*** pre-start checks 1.7. Identify, address and report ***environmental issues*** 1.8. Check records and record outstanding maintenance inspections and identified defects
2. Perform start-up operations	2.1. Confirm plant readiness for operation 2.2. Carry out ***start-up checks*** and procedures according to plant configurations and system requirements 2.3. Start-up individual plant and process and entire system 2.4. Build production rate steadily with no surges and lulls 2.5. Stabilise plant operation to meet process output and quality requirements
3. Monitor and manage operations	3.1. ***Monitor*** and manage processing utilising appropriate indicators for safe and efficient operations 3.2. Read and interpret data from ***equipment indicators***, programmable logic and SCADA, and take action where required to maintain operations according to operating parameters 3.3. Identify, manage and report faults to appropriate personnel in a timely manner 3.4. Coordinate support personnel to ensure

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	continuity of process 3.5. Manage material flow within specified parameters 3.6. Respond to alarms to, investigates conditions, and takes corrective action 3.7. Complete all required documentation clearly, concisely and on time 3.8. Pass on shift changeover details to oncoming shift
4. Conduct housekeeping activities	4.1. Maintain and ***clean*** control room ensuring work area is free of obstructions 4.2. Report hazards to maintain a safe working environment
5. Shutdown in sequence and/or isolate plant and equipment	5.1. Shutdown or isolate plant and equipment based on process or safety requirements 5.2. Perform post ***shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to perform process control room operations:

- apply legislative, organisation and site requirements and procedures
- identify hazards
- handle hazardous goods
- interpret plans, reports, specifications
- apply operations monitoring techniques
- apply problem solving techniques
- apply defects reporting procedures
- apply safe work practices
- use computer and database management systems
- apply operational safety requirements
- access, interpret and apply technical information
- applying the plant operating procedures
- apply production and equipment records maintenance requirements
- apply diagnostic techniques
- work wearing personal protective equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to perform process control room operations:

- colour codes (e.g. pipes)
- contaminant identification
- emergency procedures
- environmental procedures
- equipment processes, limitations and operating parameters
- *distribution control system* operation
- equipment safety requirements
- function of plant
- hazardous goods procedures and consequences of spills
- identifying repair requirements
- isolation procedures
- metallurgical and technical data (basic)

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- occupational health and safety procedures
- operational procedures and checks
- optimal plant capacity and throughput
- physical layout of plant
- shutdown procedures
- site procedures
- site safety requirements
- start-up and shutdown procedures
- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for performing process control room operations • implementation of requirements, procedures and techniques for the safe, effective and efficient performing of process control room operations • working with others to undertake control room operations that meet all of the required outcomes • consistent timely performing of process control room operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to perform process control room operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Personnel may include:	• operators • transport • maintenance • plant attendants
Equipment may include:	• communication devices • computers and database management system accessories • desks and chairs • monitors • power controls • touch pad
Environmental issues may include:	• drainage • dust and fumes • emissions • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality
Start-up checks may include:	• availability of equipment • detection of conditions that are unusual • job requirements • personnel availability • levels

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	• pressures • flows • vibration • communications • agitators • cameras and monitoring • interlocks • distribution control system • launders • hydraulic systems • pumps and pumping systems • screen, pipe, valve • valves • visual and audible warning devices and lights • suppression systems • motors • availability of oxygen and blower and plant air • cooling water supply • fans and draft systems
Monitoring may include:	• blockages and spillages • feed rates • overloads • pressures • power draw • wear and tear • emissions • levels • temperatures • moisture content • on-stream analysis (OSA) • filtering • corrosion
Equipment indicator readings may include:	• current • flow • levels • pressure • weight • speed • unusual noises • vibrations
Equipment and plant **cleaning**	• cleaning agents and chemicals

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methods may include:	• dusting • mopping • screen cleaning • vacuuming • wiping
Post shutdown checks are like pre-start checks. **Inspections** may include:	• distribution control system (panel) • equipment fluid levels • isolations (electronic) • light positioning and cleanliness • pages through equipment • personal proximity • possible faults and problems • safety equipment

Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRO303A Conduct sand wash plant operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of sand wash plant operations in extractive industries. It includes the planning and preparing for operations, operating the sand wash plant and carrying out post operational procedures.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conduct of sand wash plant operations 1.2. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations 1.3. ***Inspect and prepare work area*** in ***coordination with others*** to work requirements and legislative, site and manufacturer's requirements and procedures
2. Operate the sand wash plant	2.1. Resolve coordination requirements with others at the site prior to commencing and during work activities 2.2. Carry out ***pre-start***, ***start-up and shutdown procedures*** 2.3. Select and modify the ***operating technique*** to appropriately meet ***changing work conditions*** 2.4. Conduct, control and monitor operations within the equipment limitations, maintaining sand wash efficiency an effectiveness 2.5. Act on or report monitoring systems and alarms 2.6. Recognise and respond to ***hazardous and emergency situations*** 2.7. Complete work in accordance with the agreed plan and outcomes
3. Carry out post-operational procedures	3.1. Inspect, fault find and report 3.2. Carry out ***operational maintenance***, ***servicing***, ***lubricating and housekeeping tasks*** 3.3. Maintain, process and pass on records and reports

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct sand wash plant operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- applying the plant operating procedures
- apply production and equipment records maintenance requirements
- apply diagnostic techniques
- use relevant hand tools
- apply procedures for the disposal of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- work wearing personal protective equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct sand wash plant operations:

- site hazard identification and response procedures
- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements
- site communication procedures
- site product characteristics
- site geological and survey data
- site operational procedures
- plant pre-start, start-up, operating and shutdown procedures and techniques
- plant components functions, characteristics, technical capability and limitations
- plant breakdown procedures
- plant isolation procedures
- site record keeping requirements
- site confine space work procedures
- site personal protective equipment requirements
- contaminant identification

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conducting of sand wash plant operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of sand wash plant operations • working with others to undertake and complete sand wash plant operations that meets all of the required outcomes • consistent timely completion of sand wash plant operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the sand wash plant operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may come from briefings, handovers, and work orders and may include:	• product details • nature and scope of tasks • achievement targets • operational conditions • site layout and out of bounds areas • work site inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection

Coordination with others may include:	• yard persons • laboratory personnel • mobile plant operators • dredge operator • maintenance personnel
Pre-start, **start-up and shutdown procedures** may include:	• walk around check of the plant • checking and toping up fluid levels (including fuel)

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	• lubrication • inspection of attachments to ensure security and identify defects • instrument and control lever checks • reporting defects and damage • follow prescribed start-up sequence • confirm plant is operational • following prescribed shutdown sequence • securing equipment
Operating technique may include:	• feed control adjustments • water flow adjustments in sprays, classifiers • working safely around other machines and personnel
Changing work conditions may include:	• feed grading • feed contamination • availability and cleanliness of water • weather conditions • day and night
Hazardous and emergency situation may include:	• confined spaces • working alone • personal injury • unplanned shutdown • environmental • chemical • fire • dust, noise and electrical
Operational maintenance, **servicing**, **lubricating and housekeeping tasks** may include:	• scheduled servicing • changing wear components • greasing • equipment adjustments • cleaning

Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIPRO401A Supervise processing operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of processing operations in the coal mining and extractive industries. It includes: planning, preparing for and initiating processing operations; and monitoring, adjusting and reporting on the execution of operations and maintenance activities.

Application of the Unit

This unit is appropriate for those working in processing plant supervisory roles within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, prepare for and initiate processing operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conducting of ***processing operations*** 1.2. Access and share with team members the ***geological and survey data*** required to complete the processing operations 1.3. Identify hazards, assess risks and ensure there are plans or processes to manage identified risks 1.4. Prepare an action plan, in consultation with team members, which makes best use of the available ***resources*** and takes into account the requirements of the ***processing plan*** and other relevant requirements and procedures 1.5. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of the operations
2. Initiate processing operations and maintenance activities	2.1. Assign responsibilities and issue clear and timely ***instructions*** to team members and others involved for the safe, effective and efficient operation of the processing plant 2.2. Ensure hand over from shift to shift and that changes to operation are clearly informed 2.3. Set up safe maintenance systems to meet the requirements of the ***processing plan*** and relevant requirements and procedures 2.4. Initiate training activities to ensure competent team in all work activities
3. Monitor, adjust and report on execution of the processing operations	3.1. Ensure safe, effective and efficient execution of tasks 3.2. Monitor processing operations performance to ensure achievement of planned outcomes 3.3. Initiate adjustments to work programs to take into account non-achievement of planned outcomes 3.4. Complete and submit reports as required 3.5. Recommend changes to improve the safety, efficiency and effectiveness of the processing operations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise processing operations:

- apply legislative, organisation and site requirements and procedures
- provide team leadership
- apply procedures for choosing operational techniques
- apply procedures for choosing and assigning plant and equipment
- apply techniques for developing and administering work plans

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise processing operations:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- processing operations plan
- team leadership techniques
- operational techniques required for execution of the operations
- plant and equipment capabilities
- work planning techniques
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for supervising process operations • implementation of appropriate procedures and techniques for the safe, effective and efficient supervision of processing operations • working with others to plan, prepare and conduct processing operations • provision of clear and timely instruction and supervision by the individual of those involved in processing operations • evidence of the consistent successful supervision of processing operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct processing operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the processing operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Processing operations may cover:	• process control systems • automation • processing equipment • feeder systems • stockpiling • storage bins or silos • safety systems • production measurement systems
Geological data may include relevant site-specific information in relation to:	• rock or coal type and characteristics • relative density of coal and other materials • faults and joints • presence of deleterious materials to be separated from coal or other raw feed • predicted variations in raw feed quality across mine or with time in mining operations (short or long term) • inter seams or hard or soft layers which may need separation from coal • coal spontaneous combustion characteristics • water tables or other water sources
Survey data may include relevant site-specific information in relation to:	• floor heights • bench widths • grades • location within mine
Resources may include:	• budget • labour

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	• materials • services • equipment
Processing plan may include:	• production targets • product mix requirements • product quality requirements • stockpiling requirements • range of plant to be used to meet requirements • maintenance schedule • storage and discharge of separated products • raw feed blending requirements • tailings deposition/treatment requirements and procedures • reporting and record requirements and procedures
Instructions may issued in briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • refuelling arrangements • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRO402A Supervise recycled materials operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the supervision of recycled materials operations in a worksite in extractive industries. It includes the requirements for planning, preparing for and initiating recycled materials operations and monitoring, adjusting and reporting on the execution of the recycled materials operations.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, supervising recycled materials operations at surface worksites within:

- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, prepare for and initiate recycled materials operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conducting of recycled materials operations 1.2. Access and share with team members the ***geological and survey data*** required to complete the recycled materials operations 1.3. Prepare an action plan, in consultation with team members, which makes best use of the available resource and takes into account the requirements of the ***recycled materials plan*** 1.4. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of recycled materials operations 1.5. Issue clear and timely ***instructions*** to team members and others involved, for the safe, effective and efficient conduct in the recycled materials operations in accordance with the recycled materials plan
2. Monitor, adjust and report on execution of the recycled materials operations	2.1. Ensure safe, effective and efficient execution of tasks in accordance with the recycled materials plan 2.2. Monitor recycled materials operations performance to ensure achievement of planned outcomes 2.3. Complete and submit reports as required by the recycled materials plan 2.4. Recommend changes to improve the safety, efficiency and effectiveness of the recycled materials operations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise recycled materials operations:

- apply legislative, organisation and site requirements and procedures
- provide team leadership
- apply procedures for choosing operational techniques
- apply procedures for choosing and assigning plant and equipment
- apply techniques for developing and administering work plans

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise recycled materials operations:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- recycled materials operations plan
- team leadership techniques
- operational techniques required for execution of the operations
- plant and equipment capabilities
- work planning techniques
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the supervision of recycled materials operations • implementation of appropriate procedures and supervision of recycled materials operations • working with others to plan, prepare and conduct recycled materials operations • provision of clear and timely instruction and supervision by the individual of those involved in recycled materials operations • evidence of the consistent successful recycled materials operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct recycled materials operations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the recycled materials operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include:	• rock type and characteristics • faults and joints • water tables or other water sources
Survey data may include:	• floor heights • bench widths • grades
Recycled materials plan may include:	• production targets • product mix requirements • quality requirements • stockpiling requirements • raw feed blending requirements • tailings deposition/treatment requirements and procedures • reporting and record requirements and procedures
Resources may include:	• labour • materials • services • equipment
Instructions may be issued in briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • refuelling arrangements • operational conditions • obtaining permits required • site layout

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	• out of bounds areas • worksite inspection requirements • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRO501A Implement site processing plant operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of processing plant operations on a worksite in extractive industries. It includes: preparation for, planning, initiating, monitoring and adjusting and reporting on the implementation of processing operations.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, managing or advising on site processing plant operations in an extractive operation within:

- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for processing operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the implementation of processing plant operations 1.2. Confirm the ***geological and survey data*** relevant to the planning and implementation of processing plant operations 1.3. Access, interpret and clarify the ***parameters*** relevant to the planning and implementation of the processing plant operations
2. Plan the processing program	2.1. Involve ***internal and external stakeholders*** in the planning process in a way that uses their contribution effectively and gains their support for the outcomes 2.2. ***Select and identify source of the equipment*** to be used for the safe, effective and efficient implementation of the ***processing plan*** 2.3. Develop and document the processing plan in accordance with the processing operations parameters, the confirmed geological and survey data 2.4. Identify and acquire the ***resource*** required for the implementation of the processing plan 2.5. Identify and arrange any training required for personnel involved in the processing plan 2.6. Prepare and present the processing plan budget
3. Implement, monitor and adjust the processing program	3.1. Issue and explain the processing plan to team members and others involved, for the safe, effective and efficient implementation of the plan 3.2. Provide timely ongoing support and advise to those implementing the processing plan 3.3. Ensure that the dredge area is correctly marked out in accordance with the processing plan 3.4. Ensure records and reports are maintained

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	and issued in accordance with the processing plan requirements 3.5. Monitor the processing plan performance against processing plant operating parameters, the budget 3.6. Resolve anomalies in consultation with relevant stakeholders and issue appropriate instructions for adjustments to the plan and/or its implementation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement processing plant operations:

- apply legislative, organisation and site requirements and procedures
- interpret and apply geological and survey data
- provide team leadership
- apply procedure for choosing operational techniques
- apply procedures for choosing and assigning plant and equipment
- apply procedures for developing, initiating and administering work plans
- interpret and apply operational performance data

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement processing plant operations:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- geological and survey data
- processing parameters
- processing options and procedures
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- team leadership techniques
- consultative and coaching techniques
- work monitoring methods
- recording and reporting systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation of processing plant operations • implementation of procedures and techniques for the safe, effective and efficient implementation of the processing plant operations • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of processing plant options that best meet the required outcomes • working with others to undertake and complete the implementation of processing plant operations • consistent successful implementation of processing plant operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of processing plant operations
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of processing plant options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the implementation of processing

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	plant operations • provision of clear and timely required support and advice on the implementation of processing plant operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological may include:	• rock, sand and/or gravel type and characteristics • deposit strata
Survey data may include:	• drainage requirements • site and neighbouring land form • site and neighbouring boundaries and structures • site and neighbouring roads and other infrastructure
Parameters may include:	• legislative requirements • development consent requirements • operating hours limitations • required production volumes • product requirements • quality requirements • existing processing plant capacity • catering for the rock, sand or gravel characteristics
Internal and external stakeholders may include:	• site and off-site employees • contractors • equipment suppliers • geologists, surveyors and/or draughtspersons • regulatory authorities representatives • community representatives • site neighbours

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Select and identify source of the equipment may include:	• site geological factors • processing plan parameters • availability of organisation's equipment • availability of contractors equipment • comparative costs of various options
Processing plan may include:	• risk management requirements • occupational health and safety requirements • environmental requirements • hours of operation • production targets, including total volume and hourly rate • downtime targets • product mix requirements • product specifications • raw feed delivery requirements • raw feed selection requirements • raw feed blending requirements • raw feed and in-production surge pile requirements • product stockpiling requirements • quality testing requirements • tailings deposition/treatment requirements and procedures • reporting and record requirements and procedures
Resource may include:	• financial • labour • materials • services • plant and • equipment

Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIPRO502A Develop, implement and maintain process control systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation and maintenance of process control systems in extractive industries and metalliferous mining. It includes the designing of the system, maintaining the quality of materials, providing advice to customers and maintaining the system.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, managing or advising on process control systems in an open cut mine or extractive operation within:

- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Design process control systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to the implementation and maintenance of process control systems 1.2. Analyse and select equipment to meet the production needs of the extractive operation 1.3. Optimise mechanical and technological advances in the bulk extraction, transport, handling and processing of extractive materials 1.4. Initiate, encourage and monitor safe practices, policies and training for entire extractive operation 1.5. Survey, modify and record field conditions 1.6. Design, evaluate, measure and cost parameters, and identify down stream effects 1.7. Consult suppliers/manufacturers for developing solutions to particular problems, projects and needs 1.8. Compare computing systems and recommend solutions based on cost, support, material, quality produced, flexibility, servicing, environmental impact, profitability 1.9. Plan monitoring and control systems for effective ***management*** of the processing of materials and reliability of equipment 1.10. Plan and maintain accurate records for budgeting and future decision making 1.11. ***Negotiate*** with electrical suppliers for power requirements, cabling, size of supply equipment, over-use penalties, tariffs, means of improving efficiency and back-up supplies
2. Maintain quality of extractive materials	2.1. Implement and monitor accepted testing procedures used for assessing material quality in site laboratories 2.2. Access appropriate expertise to perform tests that achieve consistent results, in line with site specific quality systems that

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	conform to independent testing authority standards 2.3. Apply appropriate work practices covering all potential environmental problems 2.4. Ensure that materials are blended to improve the product quality and to produce the best balance of properties for the customer's satisfaction 2.5. Recommend adjustments to production process to meet production quality parameters in accordance with site quality plan
3. Provide advice to customers	3.1. Consult with customers/clients and offer a range of materials and their properties available to suit identified needs of customer 3.2. Identify material properties for various uses
4. Resource and utilise environmental knowledge	4.1. Collect and use data on existing climate, air quality, water ***resources***, flora and fauna and socio-economic items in pre-production, operational and post-production control phases
5. Carry out fault diagnosis and repairs	5.1. Perform routine monitoring and maintenance procedures for testing equipment in line with manufacturers specification 5.2. Ensure that laboratory personnel are trained to maintain effectiveness of site quality system

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement and maintain process control systems:

- apply legislative, organisation and site requirements and procedures
- apply procedures for monitoring and maintaining operations
- apply people and processes management techniques
- apply production operations analysis and review procedures
- apply projects and tasks management techniques
- apply human and physical resource coordinating procedures
- apply procedures to ensure delivery and maintenance of services to required specifications
- apply traffic, equipment and maintenance systems procedures
- apply techniques to evaluate new and used equipment
- apply performance audit procedures (finance, energy, safety, environment, quality assurance, legislative compliance and products)
- access and use appropriate technologies
- apply management report preparation and presentation requirements and procedures
- apply negotiating techniques (with internal/external customers, community and statutory/legal authorities)
- apply conflict resolution techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement and maintain process control systems:

- programmable logic controllers
- metalliferous mining operations
- metalliferous mining products and services
- metalliferous mining plant and equipment
- team management
- quality system
- statutory control
- organisational objectives
- resource monitoring

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- surveying
- environmental management
- OHS
- computer applications
- negotiation techniques
- statistics

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation and maintenance of process control systems • implementation of procedures and techniques for the safe, effective and efficient implementation and maintenance of process control systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of process control systems that best meet the required outcomes • working with others to undertake and complete the implementation and maintenance of process control systems • consistent successful implementation and maintenance of process control systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation and maintenance of process control systems
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of process control systems that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the implementation and

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	maintenance of process control systems • provision of clear and timely required support and advice on the implementation and maintenance of process control systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Management operates within:	• an environment ranging from small/medium/large operations • appropriate policies, guidelines and processes • established quality and continuous improvement processes • environmental standards • ethical standards established by the organisation • strategic plans developed by the organisation • productivity and profitability objectives and targets • international best practice and benchmarking principles and practices • technical standards established by industry and/or enterprise • legislation, codes and practices • resource parameters which may be defined or negotiated • a diverse range of plant/equipment, products and services • training and development/business and performance plans • enterprise/industrial agreements/awards • human resource practices and policies • learning organisation principles and practices
Management is responsible for:	• evaluating equipment/plant and power requirements for Metalliferous mining

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	operations
	• preparing a commercial viable project budget
	• evaluating, selecting, tendering and purchasing new equipment/plant
	• sourcing and raising capital development funding
	• planning and monitoring earth work operations
	• monitoring project timeframes against budget
	• commissioning geophysical surveys
	• quantifying resource and proving deposit
	• developing detailed site plans and working drawings
	• establishing a rehabilitation plan in line with regulative requirements
	• establishing and managing positive relations with others in the internal and external environment
	• research which could include:
	  • geological, climatic, hydrology/topography and environmental factors
	  • cultural and biological environments
	• improve customer relations
	• promote company image
	• influence operational performance
	• plan production schedules
	• records/reports
	  • oral/written/computer based
	• supervision of maintenance

Negotiation may be with:	• stakeholders • regulatory authorities • tenderers • operating managers • project managers • contractors • employees • community • suppliers • customers
Resources may include:	• people • buildings/facilities • finance • equipment

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	• power/energy • technology • information • time

Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPRO601A Design processing plant

Modification History

Not applicable.

Unit Descriptor

This unit covers the designing of new or extensions to existing processing plant in worksite operations in extractive industries. It includes determining the design parameters, designing the processing plant, issuing the design and providing support in its implementation.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, managing or advising on the design of processing plant within:

- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine processing plan design parameters	1.1. Access, interpret and apply ***compliance documentation*** relevant to the designing of new or extensions to existing processing plant 1.2. Identify, interpret and clarify relevant site ***geological***, ***hydrological***, ***and survey data*** and use it to development and document the ***processing plant design parameters*** 1.3. Identify, interpret and clarify relevant site ***marketing information*** and use it to development and document the processing plant design parameters.
2. Prepare processing plant design	2.1. Involve ***internal and external stakeholders*** in the planning process in a way that uses their contribution effectively and gains their support for the outcomes of each ***stage of the design process*** 2.2. Prepare the flowchart/schematic of the plant based on the processing plant design parameters 2.3. Identify and analyse options and select the ***primary items of plant and equipment*** to be used in the process based on the processing plant design parameters 2.4. Arrange and supervise the drafting of the general arrangement of the processing plant based on the flowchart/schematic, plant and equipment selected and the processing plant design parameters 2.5. Arrange and supervise the drafting of the preliminary design of the processing plant based on the general arrangement and the processing plant design parameters 2.6. Arrange and supervise the design of the process control system for the processing plant based on the preliminary design and the processing plant design parameters 2.7. Determine and document ***resource implications*** of the implementation of the design 2.8. Prepare and present the processing plant business plan/budget, including

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	contingency plans, in accordance with the organisation's requirements 2.9. Arrange and supervise the drafting of the detailed design of the processing plant based on the approved ***preliminary design***, ***process control system and processing plant design parameters*** 2.10. Identify and document the specifications for all plant and equipment items required by the processing plant design
3. Issue and provide support in the implementation of the design	3.1. Issue and explain the processing plant design to team members and others involved, to facilitate the safe, effective and efficient implementation of the processing plant design 3.2. Provide timely ongoing support and advice to those implementing the processing plant design 3.3. Ensure records and reports are maintained and issued 3.4. Monitor the processing plant design performance against the processing plant design parameters and development and operational budgets 3.5. Resolve anomalies in consultation with relevant stakeholders 3.6. Issue instructions for adjustments to the design and/or its implementation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to design processing plant:

- apply legislative, organisation and site requirements and procedures
- interpret and apply geological data
- interpret and apply hydrological data
- interpret and apply survey data
- interpret plant design plans
- interpret and apply marketing data
- provide team leadership
- apply procedures for choosing development strategies
- apply procedures for choosing plant and equipment
- interpret and apply operational performance data

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to design processing plant:

- legislative and organisation's risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- geological data
- hydrological data
- survey data
- marketing information
- processing plant design parameters
- processing plant design options and procedures
- consultative and coaching techniques
- team leadership techniques
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- recording and reporting systems
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the designing of processing plants • implementation of procedures and techniques for the safe, effective and efficient completion of the design of processing plants • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable design options and the selection of options that best meet the required outcomes • working with others to undertake and complete the design of processing plant • consistent and timely completion of the design of processing plant
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of the options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the design of processing plant
	  • consistent and timely gaining of approval of the design of processing plant
	  • provision of clear, timely required support and advice on the implementation of

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	processing plant design
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include:	• rock (or other resource) types and characteristics • faults and joints • water tables or other water sources
Hydrological data may include:	• rainfall • surface water • catchment areas • runoff characteristics • groundwater • existing streams, bores and dams
Survey data may include:	• site and neighbouring land form • site and neighbouring boundaries and structures • site and neighbouring roads and other infrastructure • approved limits of development • title details
Processing plant design parameters may include:	• operating capacity • other performance criteria • quality criteria • physical size constraints • raw feed considerations • occupational health, safety and environmental features required • compatibility with existing plant and equipment

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	• capital cost limitation • ownership cost • operating cost targets • nominated or approved suppliers • product support requirements • training to be provided by supplier • maximum downtime requirements • market considerations
Marketing information may include:	• product specifications • sales volumes
Internal and external stakeholders may include:	• site and off-site employees • contractors • equipment suppliers • geologists, surveyors and/or draughtspersons • regulatory authorities representatives • community representatives • site neighbours
Stage of the design process at which stakeholder agreement should be gained may include:	• preparation of the flowchart/schematic • selection of the primary plant and equipment • drafting of the general arrangement • drafting of the preliminary design • design of the process control system • preparation of the processing plant business plan/budget • drafting of the detailed design • documentation of plant and equipment specifications
Primary items of plant and equipment may include:	• crushers • screens • feeders • conveyors • pumps • cyclones • classifiers
Resource implications may include:	• development costs • operating costs • labour • materials • services • equipment

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Unit Sector(s)

Processing (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPSM201A Tap furnaces

Modification History

Not applicable.

Unit Descriptor

This unit covers the tapping of furnaces in the metalliferous mining industries industry. It includes preparing for furnace tapping, tapping molten metal from furnaces, completing the tapping process, and maintaining tapping equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for furnace tapping	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Establish and maintain communication with other personnel using approved communication methods 1.3. Select ***personal protective equipment*** appropriate for work activities 1.4. Identify, address and report potential risks and ***hazards*** 1.5. Identify, address and report ***environmental issues*** 1.6. Follow emergency procedures to ensure safety of personnel and plant 1.7. Use approved dust suppression and extraction methods 1.8. Ventilate work area before entry 1.9. Check availability and operational readiness of all tools and ***equipment*** required for tapping 1.10. Set up equipment ready for tapping to standard work procedures 1.11. Correctly position holding vessels/ladles in readiness to receive molten metal and slag
2. Tap molten metal from furnace	2.1. Carry out ***plant*** and equipment ***start-up checks*** and procedures according to plant/equipment configurations and system requirements 2.2. Drill, or make tap hole with oxy lance, and establish molten metal flow 2.3. Ignite ***burners*** and correctly apply to ensure molten metal does not solidify 2.4. Identify and control interference with molten metal flow to ensure quality and production targets 2.5. Take samples at appropriate bath heights for metallurgical testing to quality requirements
3. Complete tapping process	3.1. Insert and secure tap-hole seal to stop molten metal flow

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	3.2. Clean and clear tapping area of potential safety hazards 3.3. Clean and stow all tools and equipment in readiness for next tapping operation 3.4. Pass on shift changeover details to oncoming shift
4. Maintain tapping equipment	4.1. Obtain and/or manufacture tap-hole seals to specification 4.2. Replace temperature monitoring equipment to furnace safety and operational parameters 4.3. Remove and install tapping blocks to ***furnace*** safety and operational parameters 4.4. Provide support for ***maintenance*** personnel when required to organisation's requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to tap furnaces:

- apply legislative, organisation and site requirements and procedures for tapping furnaces
- troubleshoot
- work with/handle high temperature materials
- identify hazards
- interpret reports,
- use lifting techniques
- monitor system/plant
- report defects
- use fault finding, rectification and reporting techniques
- use safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to tap furnaces:

- principles of furnace operation
- characteristics of molten metal
- molten metal tapping procedures
- furnace tapping components
- trouble shooting
- combustion principles
- hazards associated with hot molten metal
- safe working procedures with molten metal
- protective equipment for working with hot materials
- potential dangers inherent in specific plant and equipment
- safe working procedures and systems
- dobie bar and clay gun positioning
- sampling methods
- despatch of waste products
- plant requirements for various schedules
- service requirements and specifications

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for tapping furnaces • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of furnace tapping • working with others to undertake and complete the furnace tapping in a way that meets all of the required outcomes • consistent timely completion of furnace tapping that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the furnace tapping

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Personal protective equipment may include:	• helmet • safety footwear • hearing protection • gloves • eye/face protection • respiratory protection • heat resistant clothing
Hazards may include:	• cranes • molten metal • hot materials • noise • air pollution • sharp objects • moving machinery • heights • falling objects • hot gases
Environmental issues may include:	• drainage • dust (dump) • emissions • hazardous chemicals

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	• noise • recycling • run-off • spills • waste management and disposal • water quality
Equipment and plant cleaning methods may include:	• degreasing • forced air • sweeping
Equipment indicator readings may include:	• current • flow • level • pressure • speed • unusual noise • vibration
Start-up checks and procedures may include:	• availability of equipment • detection of conditions that are unusual • job requirements • levels • communications • interlocks • distribution control system • launders • hydraulic systems • pumps and pumping systems • pipes and flanges • drive belts • valves • visual and audible warning devices and lights • suppression systems
Burners may be:	• diesel • natural gas
Furnaces may be:	• fixed - vertical/cylindrical • rotary - vertical/cylindrical
Furnace problems may include:	• temperatures too high or too low • level in furnace too high or low • metal splashes • feed not to specification • foaming • solidification

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	• un-burnt feed • contamination (e.g. ceramics, bricks) • poor metallurgical conditions • poor feed mix • poor feed moisture control
Maintenance may include:	• lubrication • minor adjustments to operational plant • cleaning plant, equipment and work area • installation/removal of devices • making furnace accessories
Services may include:	• electricity • air • cooling water • potable water • gas • diesel
Fault and variances may occur in:	• product • plant • equipment

Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPSM202A Prepare for pelletising activities

Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation for pelletising activities in the metalliferous mining industry. It includes preparing for pelletising, managing reclaimer piles and blend materials, and distributing raw materials for pelletising. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for pelletising	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Identify, address and report potential risks and hazards 1.6. Complete systems and equipment pre-start checks 1.7. Identify, address and report ***environmental issues***
2. Manage reclaimer piles and blend materials	2.1. Discharge materials from ***transportation*** minimising spillage and/or delays 2.2. Blend materials in specified sequence 2.3. Maintain sufficient amount of materials to meet pile building requirements 2.4. Ensure plant feed meets variable requirements to ensure quality outcomes
3. Distribute raw materials for pelletising	3.1. Suppress dust using appropriate method 3.2. Supply materials to required usage flow rates 3.3. Store materials ready for use in designated area 3.4. Accurately identify blended materials and transfer to designated area 3.5. Identify and remove oversize material before processing begins

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to prepare for pelletising activities:

- apply legislative, organisation and site requirements and procedures for preparing for pelletising activities
- troubleshoot
- apply precautions necessary for safe working
- use protective clothing and equipment
- apply operating procedures
- report faults
- recognise limits of authority
- apply team working practices
- communicate information
- use hand and power tools
- use manual handling techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to prepare for pelletising activities:

- breakdown procedures
- contaminant identification
- pelletising process
- emergency procedures
- environmental procedures
- equipment limitations and operating parameters
- hazardous goods procedures and consequences of spills and hazardous goods
- trouble shooting
- isolation procedures
- OHS requirements and procedures
- operational procedures and checks
- pumping system
- dust suppression systems
- hazards associated with by-products
- sampling purpose and procedures

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- types of ores
- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for preparing for pelletising activities • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of preparation for pelletising activities • working with others to undertake and complete the pelletising activities preparation in a way that meets all of the required outcomes • consistent timely completion of pelletising activities preparation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the pelletising activities preparation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off/spills • waste management and disposal • water quality
Transportation may include:	• rail • mobile equipment • conveyor
Plant may include:	• heat exchanger • burners • lines • automatic greaser • conveyors • valves • rollers

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	• shredder • pelletising drum • feed bins • grate
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• compressors • distribution control systems (DCS) • feeders • mobile equipment • hand and power tools • hoses
Pre-start checks may include:	• availability of equipment (e.g. conveyor) • trouble shooting • levels • walk through plant
Start-up procedures may include the inspection of:	• agitators • cameras and monitors • interlocks • distribution control system • launders • hydraulic system • pumping system • screen inspections • scuttling pumps • pipes and flanges • drive belts • valves • visual and audio warning devices and lights • suppression systems • lubrication systems

Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIPSM203A Produce pellets

Modification History

Not applicable.

Unit Descriptor

This unit covers the production of pellets in the metalliferous mining industry. It includes pelletising materials, and conditioning pellets for load out. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Pelletise materials	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. ***Monitor*** and maintain required pressure throughout the bed 1.3. Confirm feeder is clear of debris and build-up 1.4. Check and confirm condition of pallet seal and wind box to prevent leakage 1.5. Deposit pellets across full width of the grate 1.6. Operate at full bed depth and grate speed 1.7. Identify, address and report ***environmental issues***
2. Condition pellets for load out	2.1. Maintain maximum depth of pellets on pallets 2.2. Regulate temperature to plant requirements 2.3. Minimise leakage of air 2.4. Crush and screen oversize material 2.5. Extract required quantity of ***material*** at specified size to satisfy user specifications 2.6. Select personal protective equipment appropriate for work activities 2.7. Maintain walkways free of spillage and scrap 2.8. Follow safe working procedures at all times 2.9. Carry out hand-over procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to produce pellets:

- apply legislative, organisation and site requirements and procedures for producing pellets
- troubleshoot
- apply precautions necessary for safe working
- use protective clothing and equipment
- apply operating procedures
- report faults
- recognise limits of authority
- apply team working practices
- communicate information
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to produce pellets:

- breakdown procedures
- contaminant identification
- pelletising process
- emergency procedures
- environmental procedures
- equipment limitations and operating parameters
- hazardous goods procedures and consequences of spills and hazardous goods
- troubleshooting
- isolation procedures
- OHS requirements and procedures
- operational procedures and checks
- pumping system
- dust suppression systems
- hazards associated with by-products
- sampling purpose and procedures
- types of ores
- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for producing pellets • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of pellet production • working with others to undertake and complete the pellet production in a way that meets all of the required outcomes • consistent timely completion of pellet production that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the pellet production

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Monitoring the pelletising process may include the checking of:	• blockages and spillages • feed rates • mineral content • moisture levels • on stream analysis (OSA) • overloads • pressures • power draw • wear and tear • emissions • levels • corrosion
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off

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	• spills • waste management and disposal • water quality
Materials are wet and may include:	• agglomerated material
Pelletising activities include:	• correct temperature levels • correct pellet size • minimisation of dust creation • pellet composition • pellet porosity

Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPSM301A Cast a blast furnace

Modification History

Not applicable.

Unit Descriptor

This unit covers the casting of blast furnaces in the metalliferous mining industry. It includes planning and preparing for casting, casing ore and slag, and separating ore and slag. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for casting	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Select ***personal protective equipment*** appropriate for work activities 1.3. Place and operate all ***runners***, dams and skimmers correctly 1.4. Ensure that ***tools*** are at the correct temperature for effective operations 1.5. Ensure that ***casting equipment*** is ready for correct operation 1.6. Maintain tap hole correctly for efficient operation
2. Cast ore and slag	2.1. Follow safe working procedures at all times 2.2. Use appropriate safety clothing and equipment provided 2.3. Identify, address and report ***environmental issues*** 2.4. Drain runners after cast as required 2.5. Safely and correctly complete off blast activities 2.6. Correctly secure and plug the tap hole 2.7. Ensure that only iron enters the iron receiving vessel 2.8. Correctly open and keep the tap hole clear during cast 2.9. Operate correct ***warnings*** when instructed to activate item 2.10. Ensure fume extraction and indicator lights, when under front side control, are operating efficiently
3. Separate ore and slag	3.1. Follow safe working procedures at all times 3.2. Use appropriate safety clothing and equipment provided 3.3. Segregate slag according to retained ore proportion and direct accordingly 3.4. Contain slag flows within the runner system to minimise damage and spillage

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	3.5. Ensure that tools are at the correct temperature throughout to reduce the risk of explosion 3.6. Correctly maintain runner system to ensure casting proceeds to specification

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to cast a blast furnace:

- apply legislative, organisation and site requirements and procedures for casting a blast furnace
- apply precautions necessary for safe working
- use protective clothing and equipment
- apply operating procedures
- report faults
- recognise limits of authority
- apply team working practices
- communicate information
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to cast a blast furnace:

- preparing a cast
- opening and plugging of tap hole
- off blast activities
- separating slag
- dealing with hazards
- communication within work group
- reporting of faults and variances
- productive teams
- safe working

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for casting a blast furnace • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of blast furnace casting • working with others to undertake and complete the blast furnace casting in a way that meets all of the required outcomes • consistent timely completion of blast furnace casting that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the blast furnace casting

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Personal protective equipment may include:	• helmet • eye/face protection • respiratory protection • heat resistant clothing • gloves • hearing protection • safety footwear
Runners systems may include:	• dams • skimmers • tilters
Tools may include:	• chisel bars • shovels • scrapers • rammers
Casting equipment may include:	• mud gun • drill • soaker bar • oxygen lance
Environmental issues may include:	• drainage • dust

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	• emissions • flora and fauna • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality
Warnings may include:	• cast commencing • receiving vessel movement • slag casting
Non-casting activities may include:	• claying tuyere stocks • drawing copper • changing copper cooling elements • tap hole re-facing • changing injecting equipment
Hazards may include:	• rail and road movement • cranes • hot materials • noise • air pollution • sharp objects • moving machinery • falling • falling objects • gases
Teams may be formal or informal and variances may occur in:	• product • plant • equipment

Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIPSM302A Cast ingots

Modification History

Not applicable.

Unit Descriptor

This unit covers the casting of ingots in the metalliferous mining industry. It includes planning and preparing for casting operations, preparing moulds/launder systems, casting metal, removing cast metal, shutting down in sequence and/or isolating equipment, and carrying out housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for casting operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift change over details 1.3. Select ***personal protective equipment*** appropriate for work activities 1.4. Select appropriate type of equipment 1.5. Perform equipment ***pre-start checks*** 1.6. Carry out ***start-up procedures*** 1.7. Identify, address and report potential risks and hazards 1.8. Communicate with other equipment operators 1.9. Identify, address and report ***environmental issues*** 1.10. Adhere to emergency procedures 1.11. Ensure area is well ventilated 1.12. ***Mould***, ***launder and ladle system*** is adjusted, to operate within specifications
2. Prepare moulds/launder system	2.1. Dress ***moulds***/launder system 2.2. Check for defects against specifications 2.3. Prepare moulding pit according to site procedures 2.4. Dry product according to site procedures 2.5. Strip and cleanout moulding pit where required 2.6. Check cooling system for operation against specifications
3. Cast metal	3.1. ***Teem***/***tap*** liquid metal into ladles and/or launder system where required 3.2. ***Cast*** liquid metal to moulds 3.3. Take temperature and sample of the liquid to ensure pour meets specifications 3.4. Identify need for, and adjust composition of pour with additives 3.5. Monitor cast continuously
4. Remove cast metal	4.1. Knock off ***mould plates*** when mould has been bumped out

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	4.2. Repair launders where required 4.3. Identify and remove damaged and faulty mould 4.4. Remove slides from ladles, repair and reposition slides 4.5. Inspect for quality, chips and mark according to ***site procedures and quality parameters*** 4.6. Prepare ingots, anodes or bullion for transport and storage according to work plans
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown and/or isolate equipment based on process and safety requirements 5.2. Perform post ***shutdown*** and/or isolation checks
6. Carry out housekeeping activities	6.1. Clean equipment 6.2. Clean and store auxiliary services equipment 6.3. Pass on end of shift information to incoming shift 6.4. Complete all required ***documentation***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to cast ingots:

- apply legislative, organisation and site requirements and procedures for casting ingots
- deal with hazards
- receive and deploy materials
- monitoring and adjustment in process
- handle chemicals safely
- facilitate smooth product flow
- communicate skills
- deal with faults and variances

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to cast ingots:

- precautions necessary to ensure safety
- potential dangers inherent in specific plant and equipment
- safe working procedures and systems
- fume extraction requirements and methods
- power unit requirements
- specifications of moulds, bottom plates, trumpets, ingots, anodes, bullion
- application of process to different base metals
- teeming/tapping schedules
- ingot, anode and bullion weight and markers relationship
- specification and use of tiles
- storage and scheduling requirements for production
- plant requirements
- service requirements and specifications
- fault finding
- materials specifications
- limits of authority

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for casting ingots • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of casting ingots • working with others to undertake and complete the casting of ingots in a way that meets all of the required outcomes • consistent timely completion of the casting of ingots that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the casting of ingots

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Personal protective equipment may include:	• helmet • safety footwear • hearing protection • gloves • eye/face protection • respiratory protection • heat resistant clothing
Site environmental issues may include:	• drainage • dust and fumes • emissions • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality
Mould and/or launder system preparation equipment may include:	• air chisel • burning bars • jackhammers • hand hammer • explosives

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	• forklift/crane
Preparing moulds or launder systems may include:	• levelling • clamping in place • peening and chipping • removal of broken lugs • checking for wear, straight shaft • condition of seals • powdering the mould
Mould and/or launder system faults may include:	• moulds not level • metal under mould • mould bowed or cracked • dry slurry • insufficient refractory (on launders) • burners not operating
Moulds may include stools, or other launder and ladle systems.	
Teeming/tapping may include:	• up-run • down-hill • double hole • single hole
Monitoring of cast may include:	• launders • ladles • tun dishes • water and slurry sprays • correct height of cast in mould • checked lug area for slurry build up
Problems with cast may include:	• over/unfilled ladles or moulds • build up splash • mould hot spots • stuck anodes • temperature of mould too cold • slurry wrong density • wheel losing home position • wheel inhibited (stops/ stuck) • metal incorrect temperature on furnace roll down
Defective moulds and bottom plates may include:	• scrappy top • badly cracked • wet • incorrectly seated

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	• cracks • excess slurry
Shutdown procedures may include:	• drain casting ladles • turn off water, air and slurry sprays/burners • blow out moulds • flush slurry sprays • remove launders • release air
Production documentation may include:	• tonnages • quality • analysis/testing • identity • tracking
Services may include:	• electricity • air • water • gas • fuel oil
Hazards may include:	• rail and road movement • cranes • molten metal • hot materials • noise • air pollution • sharp objects • moving machinery • heights • falling objects • gases • chemicals
Raw materials may include those involved in:	• mould and stool construction
Appropriate authority may include:	• maintenance engineering personnel • management
Fault and variances may occur in:	• product • plant • equipment

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Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPSM303A Operate a blast furnace

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of blast furnaces in the metalliferous mining industry. It includes performing plant condition monitoring, and operating a blast furnace under abnormal conditions. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Perform plant condition monitoring	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Select ***personal protective equipment*** appropriate for work activities 1.3. Correctly and accurately identify and report problem areas to ***appropriate personnel*** 1.4. Correctly inspect plant and equipment to schedule to prevent unplanned production halts
2. Operate a blast furnace under abnormal conditions	2.1. Follow safe working procedures at all times 2.2. Use appropriate safety clothing and equipment provided 2.3. Identify, address and report ***environmental issues*** 2.4. Follow established procedures for ***abnormal operating conditions***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate a blast furnace:

- apply legislative, organisation and site requirements and procedures for operating a blast furnace
- troubleshoot
- apply precautions necessary for safe working
- use protective clothing and equipment
- apply operating procedures
- report faults
- recognise limits of authority
- apply team working practices
- communicate information
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate a blast furnace:

- blast furnace operation principles and plant
- safe working procedures
- emergency procedures
- environmental procedures
- dealing with hazards associated with blast furnace operation
- communication within work group
- reporting of faults and variances
- working in teams

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating blast furnaces • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of blast furnace operations • working with others to undertake and complete the blast furnace operations in a way that meets all of the required outcomes • consistent timely completion of blast furnace operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the blast furnace operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Personal protective equipment may include:	• helmet • eye/face protection • respiratory protection • heat resistant clothing • gloves • hearing protection • safety footwear
Appropriate personnel may include:	• senior operative • manager • controller
Site **environmental issues** may include:	• drainage • dust and fumes • emissions • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality
Abnormal operating conditions may include:	• power failure • adverse environmental conditions

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	• loss of services • plant or equipment failure
Hazards may include:	• rail and road movement • cranes • hot materials • noise • air pollution • sharp objects • moving machinery • falling • falling objects • gases
Teams may be:	• formal • informal
Faults and variances may include:	• product • plant • equipment
Oral communication may include:	• face-to-face • telecommunication

Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPSM304A Operate furnaces

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of furnaces in the metalliferous mining industry. It includes planning and preparing for furnace operations, starting-up the furnace, monitoring and controlling the smelting process, and shutting down the furnace. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for furnace operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Establish and maintain communications with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Identify, address and report potential risks and hazards 1.6. Identify, address and report ***environmental issues*** 1.7. Check records and record outstanding maintenance inspections and identified defects
2. Start-up furnace	2.1. Complete computer systems and ***equipment pre-start checks*** 2.2. Start-up ***furnace*** according to operating procedures 2.3. Stabilise system to produce in-specification product at specified rates
3. Monitor and control the smelting process	3.1. Complete routine checks, log and paper work 3.2. Recognise the signs of potential and actual problems 3.3. Take action to minimise the impact on safety, health, the environment and business of potential and actual problems 3.4. ***Monitor*** and trim plant to achieve required rates and quality while maximising plant efficiency 3.5. Operate furnace according to operating requirements and procedures
4. Shutdown furnace	4.1. Determine ***type of shutdown*** required 4.2. Give warning of shutdown 4.3. Shutdown furnace system according to established operating procedures for type of shutdown

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate furnaces:

- apply legislative, organisation and site requirements and procedures for operating furnaces
- operate computers
- apply precautions necessary for safe working
- use protective clothing and equipment
- apply operating procedures
- report faults
- recognise limits of authority
- apply team working practices
- communicate information
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate furnaces:

- principles of operation
- furnace components:
  - insulation (refractory)
  - physics of operation
  - chemistry of operation
- importance of flame patterns/flame impingement
- methods of resolving problem

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating furnaces • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of furnace operations • working with others to undertake and complete the furnace operations in a way that meets all of the required outcomes • consistent timely completion of furnace operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the furnace operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Site **environmental issues** may include:	• drainage • dust and fumes • emissions • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality
Equipment pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • job requirements • personnel availability • levels • pressures • flows • vibration • communications • agitators • cameras and monitoring • interlocks

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	• distribution control system • launders • hydraulic systems • pumps and pumping systems • screen, pipe, valve • valves • visual and audible warning devices and lights • suppression systems • motors • availability of oxygen and blower and plant air • cooling water supply • fans and draft systems
Furnaces may include:	• thermal cracking furnaces • catalytic cracking furnaces • cabin type • cylindrical or vertical • fixed - vertical/cylindrical (horizontal) • rotary - vertical/cylindrical (horizontal)
Furnace equipment may include:	• pumps • valves • utilities and services • heat exchangers and/or scrubbers
Furnace problems may include:	• temperature too high or low during smelting • gas, oil, oxygen, coal and air flow too low during smelting • shell leaks • fuel flow too low or high, surging • level in furnace too high or low • metal splashes • feed not to specifications • emissions not to standard • metallurgy not to standard
Monitoring may include:	• blockages and spillages • feed rates • overloads • pressures • power draw • wear and tear • emissions • levels • temperatures

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	• moisture content • on-stream analysis (OSA) • filtering • corrosion
Type of shutdown may include:	• planned - maintenance; scheduled • unplanned - services failure; break-out; environmental
Combustion components may be:	• diesel • natural gas • oxygen • oil • blower air
Equipment indicator readings may include:	• current • flow • levels • pressure • weight • speed • unusual noises • vibrations

Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPSM305A Operate converters

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of converters in the metalliferous mining industry. It includes planning and preparing for converter operations, starting up converters, monitoring and controlling the process, maintaining plant availability, and shutting down the converter. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within: Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for converter operation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Establish and maintain ***communications*** with other personnel using approved communication methods 1.4. Select ***personal protective equipment*** appropriate for work activities 1.5. Check and test control and monitoring systems for correct operation 1.6. Select appropriate type of ***auxiliary equipment*** for work activities and check for availability 1.7. Carry out computer systems and equipment ***pre-start checks*** to ensure equipment is ready for operation 1.8. Identify, address and report potential risks and ***hazards*** 1.9. Identify, address and report ***environmental issues*** 1.10. Follow emergency procedures to ensure safety of personnel and plant 1.11. Ensure approved dust suppression and extraction methods are in place 1.12. Ensure work area is adequately ventilated
2. Start-up converter	2.1. Perform pre-start checks 2.2. Carry out ***start-ups*** from standby and after ***maintenance*** according to established operating procedures 2.3. Carry out ***first charge*** to established procedures to protect personnel and plant 2.4. Stabilise the system within operating parameters
3. Monitor and control the process	3.1. Complete routine checks, logs and paperwork 3.2. Recognise and respond to signs of potential and actual ***problems*** 3.3. Monitor condition of metal and take action

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	to maintain production schedule and quality 3.4. Monitor availability of feeds and take action to maintain production schedule and quality 3.5. Monitor and maintain blast air flow to converter at optimum level 3.6. Monitor and maintain ***converter*** oxygen at optimum level 3.7. Monitor ***cooling medium*** flow to converter to maintain safe converter temperatures 3.8. Maintain metal and gas temperatures at safe levels 3.9. Control and monitor converter movement 3.10. Monitor and control rate and amount of additives to molten metal 3.11. Respond to warning alarms and lights and take action to rectify 3.12. Control and monitor metal and slag blow process and pouring 3.13. Complete log sheets
4. Maintain plant availability	4.1. Monitor plant throughout shift 4.2. Use measured/indicated data and sight e to identify issues likely to impact on plant availability 4.3. Predict impact of change in one unit/area on other plant unit/areas and communicate to relevant people 4.4. Test trips and alarms 4.5. Inspect converter plant and rectify and/or report faults 4.6. Maintain furnace temperature during non-operating periods 4.7. Operate Tuyere punching 4.8. Prepare plant for maintenance as required
5. Shutdown converter	5.1. Determine ***type of shutdown*** required and give warning 5.2. Shutdown furnace in required sequence according to established procedures 5.3. Leave plant in a condition ready to restart

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate converters:

- apply legislative, organisation and site requirements and procedures for operating converters
- troubleshoot
- apply precautions necessary for safe working
- use protective clothing and equipment
- apply operating procedures
- report faults
- recognise limits of authority
- apply team working practices
- communicate information
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate converters:

- principles of converter operation
- first charge procedures
- conversion process
- converter configuration, components and operation
- auxiliary equipment type, purpose operation
- air, water and oxygen systems and purpose
- personal protective equipment
- additives
- metal and slag blow purpose and method
- combustion principles
- trouble shooting of converter problems
- safe working

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating converters • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of converter operations • working with others to undertake and complete the converter operations in a way that meets all of the required outcomes • consistent timely completion of converter operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the converter operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives
Communications may include:	• radio • telephone • PA system • charging sirens • alarms • clear calls
Personal protective equipment may include:	• helmet • safety footwear • hearing protection • gloves • eye/face protection • respiratory protection • heat resistant clothing
Auxiliary equipment may include:	• belts • compressors • distribution control systems • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses (water and air) • pump systems • conveyors

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	• cranes
Pre-start checks may include:	• computer systems and equipment • availability of equipment • detection of unusual conditions • job requirements • personnel availability • walk through plant • communications • feed supply
Hazards may include:	• cranes • molten metal • hot materials • noise • air pollution • sharp objects • moving machinery • heights • falling objects • gases • automatic equipment start-up
Site environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
Start-ups may include:	• air systems • cameras and monitors • checking interlocks • checking distribution control system (DCS) • display instruments, lights and gauges • isolations • lighting • suppression systems • valves • visual and audio warning devices and lights

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Maintenance may include:	• minor adjustments to operational plant • cleaning plant, equipment and work area • installation/removal of devices to allow safe maintenance
First charge procedures refers to	• the initial start-up of new and refurbished vessels
Converter problems can include:	• uncontrolled emissions (gas or metal) • electrical/mechanical failures • standard of product received • additives not up to standard
Cooling media may include:	• water • air
Type of shutdown may include:	• hot shutdown for scheduled on-line maintenance • cool shutdown to minimise temperature for refurbishment
Burners may be:	• diesel • natural gas

Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPSM306A Supply molten metal and additives to furnaces

Modification History

Not applicable.

Unit Descriptor

This unit covers the supplying of molten metal and additives to furnaces in the metalliferous mining industry. It includes planning and preparing for elements, carrying out crane operations, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and interpret work requirements in the form of shift briefings, handover details or work orders and clarify/confirm before proceeding 1.3. Access and apply ***safety information and procedures*** throughout the work 1.4. Identify, address and report potential risks and ***hazards*** 1.5. Establish and maintain ***communications*** with other personnel using approved communication methods 1.6. Prepare for work in accordance with relevant standards and codes, and manufacturers/site requirements 1.7. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 1.8. Carry out pre-start checks and record according to site requirements
2. Carry out crane operations	2.1. Prepare ***load*** for lift in accordance with crane limitations and rigging requirements 2.2. Ensure no unauthorised entry to operating area 2.3. Select, fit and use auxiliary ***lifting*** devices and equipment for designated purpose 2.4. Carry out operations in cooperation with mobile plant and equipment to site procedures 2.5. Perform correct, safe lifting and associated operations, above and with, operating furnaces containing molten metal to site procedures 2.6. Pour molten metal into different size receivers so that spillage is minimised 2.7. Contain molten metal when lifting and setting down to prevent spillage 2.8. Use correct, safe technique to eliminate swing when lifting and transporting molten metal containers at recommended height to

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	furnaces/converters 2.9. Maintain communications with other operations personnel
3. Carry out operator maintenance	3.1. Carry out ***gantry crane*** inspections and fault finding in accordance with manufacturer's instructions and site requirements 3.2. Carry out housekeeping tasks in accordance with manufacturer's instructions and site authorised procedures and practices 3.3. Provide operator support during preparation for, and conduct of, major ***operator maintenance*** tasks in accordance with site requirements 3.4. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to supply molten metal and additives to furnaces:

- apply legislative, organisation and site requirements and procedures for supplying molten metal and additives to furnaces
- apply personal and operational safety procedures
- troubleshoot
- determine volume/weights prior to lifting
- maintain equipment records
- use hand and power tools
- apply diagnostic techniques
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to supply molten metal and additives to furnaces:

- Australian standards related to cranes/lifting
- smelting operations and plant
- site and equipment safety requirements
- crane equipment characteristics, technical capabilities and limitations
- crane operational procedures/maintenance systems and procedures
- basic rigging and slinging requirements
- site-specific signals used with crane operations
- determining volume/weights
- site environmental requirements and constraints related to gantry cranes
- hazards associated with working with hot molten metals
- communication methods and protocols

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for supplying molten metal and additives to furnaces • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of supplying of molten metal and additives to furnaces • working with others to undertake and complete the supplying of molten metal and additives to furnaces in a way that meets all of the required outcomes • consistent timely completion of supplying molten metal and additives to furnaces that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the supplying molten metal and additives to furnaces

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • management plans • manager's rules • environmental legislation • OHS policy • code of practice • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Work briefings may include:	• crane equipment to be used • nature and scope of tasks • details of load chart/factors • achievement targets • working conditions • site lighting arrangements • defects on equipment • hazards and potential hazards • coordination requirements/issues
Work preparation may include:	• avoidance of hazards • identification of load • identification and selection of lifting equipment • inspection and certification of lifting equipment • management of permits and tags

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Specific safety requirements may include:	• control and safety of travelling speed • selection and observance of safe working levels and angles • boarding and disembarking procedures • communications • signaling procedures • lifting and carrying hot molten metal • two-crane operations • working safely with mobile plant and equipment
Hazards may include:	• facilities • other equipment • dangerous materials • hot metal
Communications may be with:	• furnace operators • other cranes • mobile plant operators • supervisors/plant attendants
Signals for load moving are given using methods that may include:	• verbal • hand signals to Australian standards • whistles/hooters to Australian standards • two-way radio/telephones • light signals to Australian standards
Lifting operations associated with operational furnaces may include:	• lifting and transferring molten metal • pouring pots using two hook techniques • bumping hot molten metal pots to dislodge solidified metal • removal of hot molten metal from furnaces/converters • supply of hot molten metal to furnaces/converters • placing pots under hot molten metal vessels • removing metal accretions from furnaces/converters • pouring molten metal to moulds
Gantry cranes may include:	• single girder • double girder • top running • under running • single and double leg • monobox girder • torsional box girder

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Operator (**operational**) **maintenance** procedures are those established and authorised for the site.	

Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPSM307A Control molten metal in holding furnace/vessel

Modification History

Not applicable.

Unit Descriptor

This unit covers the controlling of molten metal in a holding furnace/vessel in the metalliferous mining industry. It includes preparing for holding furnace operations, operating and monitoring holding furnace operations, and discharging matte and slag to matte and slag pots. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for holding furnace operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Establish and maintain communication with other personnel using approved communication methods 1.3. Select ***personal protective equipment*** appropriate for work activities 1.4. Identify, address and report potential risks and ***hazards*** 1.5. Identify, address and report ***environmental issues*** 1.6. Follow emergency procedures to ensure safety of personnel and plant 1.7. Check and test remote control and ***monitoring*** systems for correct operation 1.8. Plan and put work area ventilation in place
2. Operate and monitor holding furnace operations	2.1. Carry out plant and equipment start-up checks and procedures according to plant/equipment configurations and system requirements 2.2. ***Monitor holding furnace*** operations 2.3. Monitor and receive matte and/or slag flow from furnace 2.4. Control furnace rotation/tilting within recommended rate and angle parameters to efficiently separate matte and slag 2.5. Control main and secondary burner operation to hold constant, recommended matte and slag temperature 2.6. Carry out holding furnace drive equipment diagnoses to monitor and maintain correct, safe operation 2.7. Check on holding furnace operations at regular intervals during the shift and rectify identified ***faults*** 2.8. Plan and organise matte supply to converter with other personnel and adjust tonnage to meet requirements 2.9. Maintain cleanliness of spouts to allow consistent, continuous flow of molten metal

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3. Discharge matte and slag to matte and slag pots	3.1. Ensure pot area is clear of personnel and machinery before pouring commences 3.2. Position pot correctly to avoid splash, spillage or damage 3.3. Rotate vessel/pot at correct angle to ensure an even flow of matte and slag 3.4. Assess matte and slag levels and pour slag and dispose of matte ensuring that pot is not overfilled 3.5. Take and measure samples to ensure the slag and matte quantity is in an acceptable range

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to control molten metal in a holding furnace/vessel:

- apply legislative, organisation and site requirements and procedures for controlling molten metal in a holding furnace/vessel
- troubleshoot
- apply precautions necessary for safe working
- use protective clothing and equipment
- apply operating procedures
- report faults
- recognise limits of authority
- apply team working practices
- communicate information
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to controlling molten metal in a holding furnace/vessel:

- principles of holding vessel/furnace operation
- characteristics of molten metal (basic)
- molten metal pouring procedures
- furnace components and function
- troubleshooting
- combustion principles
- importance of flame patterns/flame impingement
- hazards associated with hot molten metal
- safe working procedures with molten metal
- protective equipment for working with hot materials
- potential dangers inherent in specific plant and equipment
- pot positioning
- sampling
- decanting
- despatch of waste products
- storage and scheduling requirements for production

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- plant requirements for various schedules
- service requirements and specifications
- fault finding, rectification and reporting
- materials specifications
- standard operating procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for controlling molten metal in a holding furnace/vessel • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of controlling molten metal in a holding furnace/vessel • working with others to undertake and complete the controlling of molten metal in a holding furnace/vessel in a way that meets all of the required outcomes • consistent timely completion of controlling molten metal in a holding furnace/vessel that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the controlling of molten metal in a holding furnace/vessel

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Personal protective equipment may include:	• helmet • safety footwear • hearing protection • gloves • eye/face protection • respiratory protection
Hazards may include:	• mobile plant/cranes • molten metal • hot materials • noise • air pollution • sharp objects • moving machinery • heights • falling objects • gases
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals

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	• noise • recycling • run-off/spills • waste management and disposal • water quality
Monitoring may include:	• blockages and spillages • feed rates • overloads • pressures • power draw • wear and tear • emissions • levels • temperatures • on-stream analysis (OSA) • filtering • corrosion
Furnace problems may include:	• temperatures too high or too low during oxidation and charging • air flow too low for burners • fuel flow too low or too high, surging • level in furnace too high or low • metal splashes • feed not to specification • matte grade
Fault and variances may occur in:	• product • plant • equipment
Burners may be:	• diesel • natural gas
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • job requirements • levels • pressures • flows • communications • cameras and monitoring • interlocks • distribution control system • launders

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	• hydraulic systems • pumps and pumping systems • screen, pipe, valve • visual and audible warning devices and lights • suppression systems • motors • availability of oxygen and plant air • cooling water supply • diesel supply • fans and draft systems • compressors
Equipment indicator readings may include:	• current • flow/levels • pressure • speed
Maintenance may include:	• lubrication • minor adjustments to operational plant • cleaning plant, equipment and work area
Indicator readings may include:	• alarms • distribution control systems • mimic panel • screens • temperature • flow • weight • pressure

Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPSM308A Monitor and maintain furnace gas efficiency

Modification History

Not applicable.

Unit Descriptor

This unit covers the monitoring and maintenance of furnace gas efficiency in the metalliferous mining industry. It includes preparing for plant and equipment operation, maintaining efficient operation of furnace gas plant and systems, controlling furnace gas emissions, maintaining efficient operation of furnace air injecting equipment, ensuring supply of additives, maintaining plant and equipment efficiency, and shutting down plant and equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for plant and equipment operation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Establish and maintain communication with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate ***auxiliary equipment*** for work activities 1.6. Carry out equipment ***pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Follow emergency procedures to ensure safety of personnel and plant 1.10. Use approved dust suppression and extraction methods 1.11. Ventilate work area before entry
2. Maintain efficient operation of furnace gas plant and systems	2.1. Carry out plant and equipment ***start-up checks*** and procedures according to plant/equipment configurations and system requirements 2.2. Carry out ***monitoring*** and control on DCS 2.3. Operate and maintain air operated breathing equipment for ***furnace*** off-line entry
3. Control furnace gas emissions	3.1. Carry out ***plant and equipment start-up checks and procedures*** according to plant/equipment configurations and system requirements 3.2. Monitor and operate accretion build-up removal equipment to ensure efficient operation of air injection equipment 3.3. Monitor furnace feed chutes for blockages and maintain to ensure optimum production 3.4. Take samples of molten metal to confirm

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	molten metal quantity and condition of molten metal bath
4. Maintain efficient operation of furnace air injection equipment	4.1. Carry out plant and equipment start-up checks and procedures according to plant/equipment configuration and system requirements 4.2. Monitor furnace conditions and operations to identify the correct, efficient operation of the furnace air injection equipment, and report to Control Room Operator 4.3. Identify furnace inefficiencies and furnace air injection equipment and change/replace where necessary, ensuring minimum furnace down-time 4.4. Clean furnace air injection equipment/device without causing damage 4.5. Check and record furnace air injection equipment/device position, and recalibrates where outside operating parameters
5. Ensure supply of additives	5.1. Monitor and maintain condition of furnace feed materials 5.2. Monitor furnace additives supply and report to Control Room Operator for action
6. Maintain plant and equipment efficiency	6.1. ***Clean*** plant to maintain condition of all equipment to ensure safe and efficient operations 6.2. Identify and report hazards to maintain a safe working environment 6.3. Interpret and respond to plant alarms, take remedial actions and notify appropriate personnel 6.4. Check and adjust ***plant condition*** to maintain efficient operation 6.5. Install and control stand-by furnace ***burner*** equipment to maintain safe furnace refractory temperatures 6.6. Inspect air, gas, diesel and combustion supply equipment and replace/report faults, damaged or inoperable equipment to appropriate personnel 6.7. Carry out ***minor plant maintenance*** and lubrication tasks 6.8. Provide support for maintenance personnel where necessary to organisation's

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	requirements
7. Shutdown plant and equipment	7.1. Shutdown or isolate plant/equipment based on process and safety requirements 7.2. Perform post shutdown or isolation checks 7.3. Pass on shift changeover details to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to monitor and maintain furnace gas efficiency:

- apply legislative, organisation and site requirements and procedures for monitoring and maintaining furnace gas efficiency
- troubleshoot
- apply precautions necessary for safe working
- use protective clothing and equipment
- apply operating procedures
- report faults
- recognise limits of authority
- apply team working practices
- communicate information
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to monitor and maintain furnace gas efficiency:

- principles of furnace operation/ furnace components
- gas paths
- insulation (refractory)
- combustion principles
- importance of flame patterns/flame impingement
- methods of resolving combustion/gas problems
- ability to isolate problem to item of equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for monitor and maintain furnace gas efficiency • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of monitor and maintain furnace gas efficiency • working with others to undertake and complete the monitoring and maintenance of furnace gas efficiency in a way that meets all of the required outcomes • consistent timely completion of monitoring and maintenance of furnace gas efficiency that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the monitoring and maintenance of furnace gas efficiency

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• weighers • compressors • distribution control systems • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses (water and air) • pumps
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • job requirements • personnel availability • walk through plant • communications
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise

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	• recycling • run-off • spills • waste management and disposal • water quality
Start-up checks may include:	• draft systems • cameras and monitors • checking distribution control system (DCS) • chutes • display instruments, lights and gauges • equipment stop engine lights • hydraulic system • isolations • lighting • suppression systems/valves • visual and audio warning devices and lights
Monitoring may include:	• blockages and spillages • feed rates • overloads • pressures • power draw • wear and tear • emissions • levels • temperatures • moisture content • on-stream analysis (OSA) • filtering • corrosion • indicators including" • alarms • distribution control systems • mimic panel • screens • temperature • flow • weight • pressure
Furnaces may be:	• fixed - vertical/cylindrical • rotary - vertical/cylindrical
Equipment and plant **cleaning**	• degreasing

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methods may include:	• forced air • sweeping
Plant condition may include:	• air ingress to furnace • fuel flow too low or too high, surging • discharge of flue dust • molten metal splashes • moisture levels incorrect
Burners may be:	• diesel • natural gas
Minor plant maintenance may include:	• lubrication • minor adjustments to operational plant • cleaning plant, equipment and work area • installation/removal of devices to allow safe maintenance • fixing leaks

Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIPSM309A Monitor and maintain flue gas efficiency

Modification History

Not applicable.

Unit Descriptor

This unit covers the monitoring and maintenance of flue gas efficiency in the metalliferous mining industry. It includes preparing for plant and equipment operation, maintaining efficient operation of gas plant and systems, maintaining plant and equipment efficiency, and shutting down plant and equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for plant and equipment operation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Establish and maintain communication with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate ***auxiliary equipment*** for work activities 1.6. Carry out equipment visual ***pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Follow emergency procedures to ensure safety of personnel and plant 1.10. Use approved dust suppression and extraction methods 1.11. Ventilate work area before entry
2. Maintain efficient operation of gas plant and systems	2.1. Carry out plant and ***equipment start-up checks and procedures*** according to plant/equipment configurations and system requirements 2.2. Operate and maintain air operated breathing equipment for flue gas plant off-line entry 2.3. Control mixing chamber temperatures by automatic or manual methods 2.4. ***Clean***, inspect and maintain gas cooling plant in operational condition to ensure efficient gas cooling 2.5. ***Monitor*** and control flue gas temperature control additive to maintain mixing chamber temperature
3. Maintain plant and equipment efficiency	3.1. Clean plant to maintain condition of all equipment to ensure safe and efficient

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	operations 3.2. Identify and report hazards to maintain a safe working environment 3.3. Interpret and respond to ***plant alarms***, take remedial actions and notify appropriate personnel 3.4. Check and adjust plant condition to maintain efficient operation 3.5. Maintain plant hygiene and safety 3.6. Changeover and adjust plant to meet operational and maintenance requirements 3.7. Carry out ***minor plant maintenance*** and lubrication tasks 3.8. Provide support for maintenance personnel where necessary to organisation's requirements
4. Shutdown plant and equipment	4.1. Shutdown or isolate plant/equipment based on process and safety requirements 4.2. Perform post shutdown or isolation checks 4.3. Pass on shift changeover details to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to monitor and maintain flue gas efficiency:

- apply legislative, organisation and site requirements and procedures for monitoring and maintaining flue gas efficiency
- troubleshoot
- apply precautions necessary for safe working
- use protective clothing and equipment
- apply operating procedures
- report faults
- recognise limits of authority
- apply team working practices
- communicate information
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to monitor and maintain flue gas efficiency:

- principles of flue gas plant operation
- gas paths
- environmental protection requirements
- hygiene management
- dust collection and disposal systems and plant
- plant inspections
- insulation (refractory)
- combustion principles
- methods of resolving gas problems
- ability to isolate problem to item of equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for monitoring and maintaining flue gas efficiency • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of flue gas efficiency monitoring and maintenance • working with others to undertake and complete the monitoring and maintenance of flue gas efficiency in a way that meets all of the required outcomes • consistent timely completion of flue gas efficiency monitoring and maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the monitoring and maintenance of flue gas efficiency

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulations dealing with:	• mining safety and health • mine inspection • OHS • explosives • environment
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• weighers • compressors • distribution control systems • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses (water and air) • pumps
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • job requirements • personnel availability • walk through plant • communications
Environmental issues may include:	• drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals

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	• noise • recycling • run-off • spills • waste management and disposal • water quality
Equipment start-up checks and procedures may include:	• draft systems • cameras and monitors • checking distribution control system (DCS) • chutes • display instruments, lights and gauges • equipment stop engine lights • hydraulic system • isolations • lighting • suppression systems • valves • visual and audio warning devices and lights
Cleaning methods may include:	• degreasing • forced air • sweeping
Monitoring may include:	• blockages and spillages • feed rates • overloads • pressures • power draw • wear and tear • emissions • levels • temperatures • moisture content • on-stream analysis (OSA) • filtering • corrosion
Plant alarms may include those for:	• alarms • distribution control systems • mimic panel • screens • temperature • flow • weight

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	• pressure
Minor plant maintenance may include:	• lubrication • minor adjustments to operational plant • cleaning plant, equipment and work area • installation/removal of devices to allow safe maintenance • fixing leaks

Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIQUA201A Maintain and monitor site quality standards

Modification History

Not applicable.

Unit Descriptor

This unit covers the maintenance and monitoring of site quality standards in the resources and infrastructure industries. It includes planning and preparing for quality work outcomes, applying quality systems to individual work activities, and monitoring and reporting quality standards on a worksite. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, prepare for quality work outcomes	1.1. Access, interpret and apply ***compliance documentation*** including ***quality standards*** relevant to the work activity 1.2. Identify and agree on ***performance indicators*** for individual work with the appropriate persons 1.3. Ensure work is completed within time, quality, cost and productivity parameters 1.4. Plan work to facilitate the achievement of quality standards
2. Apply quality systems to individual work activities	2.1. Carry out work to relevant quality procedures 2.2. Adjust and agree on performance indicators to meet changing circumstances with appropriate personnel 2.3. Suggest and implement procedure improvements with relevant people including corrective actions 2.4. Complete ***relevant quality documentation*** in accordance with site requirements
3. Monitor and report quality standards on a worksite	3.1. Monitor quality of outputs and identify non-compliance 3.2. Monitor work processes, report incidents and apply local risk control processes to minimise quality non-compliance 3.3. Communicate information about variations in quality to ***appropriate personnel***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to maintain and monitor site quality standards:

- apply legislative, organisation and site requirements and procedures for maintaining and monitoring site quality standards
- maintain, monitor and recommend changes to system documents including reporting documents, work systems and/or plant
- solve problems, particularly in teams, paying particular attention to safety issues and adjusting performance indicators to reflect changed circumstances
- show initiative in adapting to changing work conditions or contexts particularly when working across a variety of work areas
- access, interpret and apply information on relevant organisation policies, procedures and instructions
- use mathematical ideas and techniques to complete quality documentation

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to maintain and monitor site quality standards:

- site/enterprise quality systems and processes
- work planning processes
- technical and operational capability and limitations of resources and workplace equipment
- company and statutory guidelines, procedures and practices
- reporting procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for maintaining and monitoring site quality standards • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of maintenance and monitoring of site quality standards • working with others to undertake and complete the maintenance and monitoring of site quality standards that meets all of the required outcomes • consistent timely completion of maintenance and monitoring of site quality standards that safely, effectively and efficiently meets the required outcomes.
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the maintenance and monitoring of site quality standards

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation and quality standards may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • site management plans • code of practice, recognised standards or guidelines • approved code of practice • systems of health and safety • customer specifications • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Performance indicators may include:	• time parameters • quantity • productivity parameters • quality parameters • cost parameters • time targets for own work • criteria for evaluation of own work • measures to avoid wastage • criteria for measurement of internal and external customer satisfaction • processes to ensure 'right first time' approach
Relevant quality documentation may include:	• daily production reports • specific product or process reports or records
Appropriate personnel may include:	• those for whom one has responsibility • line managers • staff representatives • colleagues • customers • suppliers

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Unit Sector(s)

Quality

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIQUA401A Apply a quality management system on site

Modification History

Not applicable.

Unit Descriptor

This unit covers the application of a quality management system on site in the resources and infrastructure industries. It includes implementing quality processes, making recommendations based on performance that has been monitored and reported on and consolidating opportunities for further development Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Implement quality processes	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Actively encourage and support team members to participate in the site quality plan decision making processes and to assume responsibility and authority 1.3. Provide information on the ***site quality plan*** in a language, style and format that is understood by ***site personnel*** 1.4. Provide coaching and mentoring support to individuals and teams to maximise opportunities for implementation of the site quality plan 1.5. Maintain the site quality plan while implementing the quality requirements of other site processes
2. Make recommendations based on performance that has been monitored and reported on	2.1. ***Monitor*** the organisations systems and technology to identify ways in which planning and operations could be developed 2.2. Strengthen customer service by using quality improvement techniques and processes 2.3. Identify and recommend developments to the site quality plan to relevant personnel and apply appropriate recommendations
3. Consolidate opportunities for further development	3.1. Inform individuals and teams of savings and productivity improvements in achieving the site quality plan 3.2. Document work performance and use the information to identify opportunities for the development of quality 3.3. Manage quality records, reports and recommendations for development in accordance with the site quality plan requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to apply a quality management system on site:

- apply legislative, organisation and site requirements and procedures for applying a quality management system on site
- promote and monitor quality processes on site
- gain the commitment of individuals and teams to quality principles and practices
- encourage ideas and feedback from other team members in developing and refining quality processes
- use available technology to monitor and review quality performance
- apply effective quality problem identification and problem solving techniques
- initiate processes to enhance the quality of individual and team performance
- maintain a focus on quality performance in achieving outcomes acceptable to customers

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to apply a quality management system on site:

- legal knowledge relating to a site quality plan
- key aspects of the organisation's quality system
- site quality plan procedures and requirements
- human resource management principles
- continuous quality improvement processes
- quality plan monitoring and review procedures and processes

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for application of a quality management system on site • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of application of a quality management system on site • working with others to plan, prepare and conduct the application of a quality management system on site • evidence of the consistent successful application of a quality management system on site
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application of a quality management system, on site provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the application of a quality management system

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Site quality plan may include:	• organisation's quality policy • allocation of responsibilities • consultation procedures • communication procedures • monitoring procedures • review procedures • record keeping procedures • reporting procedures • training procedures • compliance procedures • procedures for applying interim solutions • standard operating procedures • safe operating procedures • work instructions • emergency procedures • permit requirements • sampling and testing procedures • documentation procedures • reporting procedures • product specifications • delivery standards • customer service standards
Site personnel may include:	• employees • contractors
Monitor may include:	• periodically observing • supervising

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	• critically observing • recording the progress of an activity • identifying quality development opportunities

Unit Sector(s)

Quality

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIQUA501A Implement, monitor and develop quality management plans

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation, monitoring and development of quality management plans in the resources and infrastructure industries. It includes identification of opportunities to develop a framework for quality management plans, implementation processes for encouraging ideas to support the plan, implementation of the plan and monitoring and updating the quality management processes. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify opportunities to develop the framework for quality management plans	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Document quality objectives and develop in ***consultation with relevant personnel*** to align with organisational objectives 1.3. Identify ***systems procedures*** regarding quality management processes that may require review and/or further consultation with relevant personnel 1.4. Apply the quality management plan in job descriptions and duty statements for all relevant ***site personnel***
2. Implement processes for encouraging the development of ideas to support the site quality management plan	2.1. Identify existing and potential quality issues and obtain ideas from site personnel regarding possible improvements, providing prompt consideration and feedback to maximise potential benefits 2.2. Regularly advise all site personnel on the benefits of quality ***site procedures and practices*** 2.3. ***Document*** and develop site procedures and practices in consultation with relevant personnel 2.4. Identify, maintain and ***monitor*** the ***information sources*** and actively seek commitment to the implementation of quality management plans
3. Implement the site quality plan	3.1. Document how the quality management plan will be introduced or enhanced at the worksite 3.2. Provide information and ***resources*** for the implementation of the quality management plan in a form readily accessible to site personnel in a timely and consistent manner 3.3. Provide appropriate training and support for site personnel on the implementation of quality management plan site procedures and practices 3.4. Maintain site quality management plan records
4. Monitor and update the quality	4.1. Monitor the reviews of the systems

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management processes	procedures of the quality management plan and actively seek consultation with relevant personnel if site procedures and practices need to be modified to meet quality management plan targets 4.2. Update the quality management plan and its implementation when ***worksite changes*** are anticipated 4.3. Retain documentation stating reasons for worksite changes in accordance with legislative and organisational requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to implement, monitor and develop quality management plans:

- read, interpret, communicate and apply legislative, organisation and site requirements and procedures for implementing, monitoring and developing quality management plans including:
  - legislation relating to quality management
  - client quality requirements and procedures
  - organisational quality requirements and procedures
  - manufacturer's quality requirements and procedures
  - technical quality management information
  - quality management rules
  - quality management procedures
  - quality management regulations
  - basic statistical information
- develop and maintain site quality management procedures and practices
- facilitate quality management planning
- maintain relevant quality management documentation
- monitor and decide on changes to quality management processes
- provide leadership and guidance for quality management group activities
- actively encourage the free exchange of quality information
- analyse quality management ideas
- solve problems through negotiation

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to implement, monitor and develop quality management plans:

- organisation's quality policies, goals and objectives
- relevant legislative, client and manufacturer's quality requirements
- roles and responsibilities of relevant personnel within the organisation
- action planning methods
- human resource management processes
- methods of identifying appropriate action based on cost, health, safety, and quality issues

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- work procedure/instruction writing
- quality management reporting and recording procedures
- worksite operating procedures
- quality issues identification processes
- quality issues assessment processes
- quality issues resolution processes
- quality management system documentation methods
- quality management research processes
- quality management security risk processes
- quality customer relations processes

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for implementing, monitoring and developing quality management plans • implementation of procedures and techniques for the safe, effective and efficient implementation, monitoring and development of quality management plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of quality management plans that best meet the required outcomes • working with others to undertake and complete the implementation, monitoring and development of quality management plans • consistent successful implementation, monitoring and development of quality management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge in undertaking the implementation, monitoring and development of quality management plans
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work to meet the required outcomes
	  • identification of viable options and the selection of quality management plans that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the implementation, monitoring

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	and development of quality management plans • provision of clear and timely support and advice on the implementation, monitoring and development of quality management plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• federal, state and local government legislation and regulations including:
	  • OHS including workplace safety, dangerous goods
	  • equal employment opportunity
	  • disability discrimination
	  • public health
	  • environmental management requirements and procedures
	  • industrial
	  • consumer protection
	  • trade practices
	  • anti-discrimination
	  • freedom of information
	• industry codes of conduct
	• manufacturer's guidelines and specifications
	• risk assessment and management requirements and procedures
	• occupational licensing
	• materials safety data sheet
	• traffic management requirements and procedures
	• cultural and heritage requirements and procedures
	• quality requirements and procedures
	• Australian and other relevant standards
	• current industry best practice
	• communication requirements and procedures
	• procurement requirements and procedures
	• employment requirements and procedures
	• workplace relations requirements and procedures
	• contract management requirements and procedures
	• administration requirements and procedures,

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	including: • records • reporting • maintenance • servicing • housekeeping requirements and procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Consultation with relevant personnel may include with:	• senior management • subject matter experts • regulatory authorities • tenderers • project managers • contractors • employees • community • customers • suppliers
Systems procedures may include:	• identification of quality issues • assessment of quality issues • resolving quality issues • interim solutions • dealing with unplanned incidents and events • consultation • communication • monitoring • review • record keeping • reporting • training
Site personnel may include:	• employees • contractors
Site procedures and practices may include:	• standard operating procedures • safe operating procedures • work instructions • emergency procedures • allocation of responsibilities • permit requirements • sampling, testing and worksite inspection

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	requirements • documentation and reporting requirements
Documenting may include:	• results • recommendations • assessment forms • action planning documents • work schedules • reports
Monitoring may include:	• checking • supervising • observing critically • recording the progress of an activity, action or system periodically in order to identify change
Information sources may include:	• expert advice • staff contributions

Resources may include:	• people
	• finance
	• equipment
	• buildings/facilities
	• technology
	• information
	• worksite changes may include:
	  • a worksite other than that which the original quality management plan was intended
	  • a modified worksite

Unit Sector(s)

Quality

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIQUA601A Establish and maintain a quality system

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintenance of a quality system in the resources and infrastructure industries. It includes establishing and maintaining the framework for the quality system, establishing a collaborative process, establishing and maintaining procedures for identifying and assessing quality issues, designing procedures for treatment of quality issues and evaluating the organisation's quality system. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish and maintain the framework for the quality system	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Develop, document and have the ***quality system*** approved 1.3. Include implementation responsibilities and duties of the quality system in job descriptions and duty statements for all ***relevant personnel*** 1.4. Identify, source and provide the ***resources*** for the operation of the quality system in a timely and consistent manner 1.5. Provide information on the quality system and its procedures in a readily accessible location and in a clear format for relevant personnel
2. Establish a collaborative process	2.1. Establish and maintain collaboration processes with relevant personnel and enact ***consultation*** processes 2.2. Address issues raised promptly and appropriately in accordance with procedures for issue resolution 2.3. Inform relevant personnel of outcomes resulting from collaboration
3. Establish and maintain procedures for identifying and assessing quality issues	3.1. Identify existing and potential ***quality issues*** and trends from the quality records system 3.2. Implement and develop ***system procedures*** for the ongoing identification of existing and potential quality issues 3.3. Monitor changes to the workplace to determine if additions or modifications to the quality system are required
4. Design procedures for treatment of quality issues	4.1. Implement and develop system procedures to treat quality in accordance with ***legislation***, code of practice and trends identified from the quality system 4.2. Implement and develop system procedures for applying interim solutions until permanent treatment measures are in place when measures to treat quality issues at their source are not practical

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	4.3. Implement and develop system procedures for ongoing treatment of the quality system based on the hierarchy of control 4.4. ***Monitor*** quality activities throughout the organisation, identify inadequacies and provide resources to implement appropriate quality measures 4.5. Implement training programs to meet quality system training requirements as part of the organisation's general training program
5. Evaluate the organisation's quality system	5.1. Evaluate the effectiveness of the quality system within the goals and objectives of existing organisational boundaries 5.2. Recommend appropriate improvements to the quality system 5.3. Evaluate compliance with legislation and code of practice

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to establish and maintain a quality system:

- apply legislative, organisation and site requirements and procedures for establishment and maintenance of a quality system
- design quality work procedures and practices
- develop business plans incorporating the quality system
- develop quality resource plans
- manage quality systems implementation projects and tasks
- coordinate human, financial and physical resources
- audit the quality systems' performance
- implement quality change
- access and use appropriate technologies
- resolve conflict arising out of quality concern
- communicate ideas and information

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used.

This includes knowledge of the following as required to establish and maintain a quality system:

- quality system principles and practice
- best practice quality principles and techniques
- industry quality benchmarks
- information collection and review techniques
- organisation's quality exporting requirements
- organisation's resource acquisition processes
- organisation's operations
- organisation's products and services
- organisation's plant and equipment
- continuous improvement principles
- organisational strategic and quality objectives
- human resource policies and practices
- risk management, principles, strategies and applications
- customer/client relations techniques

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- organisational change and development processes
- computer applications
- negotiation techniques
- statistics

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining a quality system • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of a quality system • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of a quality management system that best meet the required outcomes • working with others to undertake and complete the establishment and maintenance of a quality system • consistent successful establishment and maintenance of a quality system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge in undertaking of the establishment and maintenance of a quality system
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of a quality system that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the establishment and maintenance of a quality system

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	• provision of clear and timely required support and advice on the establishment and maintenance of a quality system
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Quality system may include:	• quality policy • quality system and site procedures • site-specific work instructions • consultative processes • product specifications • service standards • quality records • quality policies • quality procedures • quality programs
Relevant personnel may include:	• managers • supervisors • quality officer/manager • laboratory personnel • all site personnel • contractors
Resources may include:	• people • finance • buildings/facilities • technology • information
Consultation may include:	• consultation with environmental and laboratory personnel • issue resolution procedures • collaboration • employee representatives

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	• site personnel • statutory/legal authorities
Quality issues may include	• product specification or defects • delivery requirements • customer service expectations • product testing • site inspections • checklists • quality issues identification processes • non-compliance reports • customer feedback • sales staff feedback • allocation of responsibilities and duties • identification of quality issues • treating quality issues • interim solutions • dealing with unplanned incidents and events • consultation • communication • monitoring • review and improvement of the system • assessment of compliance • record keeping • reporting • training • organisational quality guidelines • organisational aims • issue resolution • quality records system
Legislation may include:	• maintenance of statutory/legal records • provision of information and training • regulations and code of practice and procedures relating to statutory/legal compliance • site representatives and committees • issue resolution
Monitor may include	• review of written reports • performance appraisal • auditing procedures • periodical review of procedures

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Unit Sector(s)

Quality

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI401A Apply and monitor mine services and infrastructure systems

Modification History

Not applicable.

Unit Descriptor

This unit covers applying and monitoring site services and infrastructure systems in coal and metalliferous mining industries. It includes planning, preparing for, applying and monitoring systems for the operation and maintenance of site services and infrastructure systems and equipment; and applying systems maintenance procedures.

Application of the Unit

This unit is appropriate for those working in a supervisory or technical specialist roles, within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the operation and maintenance of site services and infrastructure systems and equipment	1.1. Access, interpret and apply ***compliance documentation*** relevant to applying and monitoring ***site services and infrastructure systems*** 1.2. Plan and prepare for the operation and maintenance of site services and infrastructure systems and equipment 1.3. Identify, ***hazards*** associated with the installation and operational requirements of site services and infrastructure equipment and evaluate ***risks*** and apply controls 1.4. Access and interpret site procedures 1.5. Identify individual training needs
2. Apply and monitor systems for the operation and maintenance of site services and infrastructure systems and equipment	2.1. Assess the impacts of equipment and ***systems*** on work processes and record and report processes to meet equipment and site requirements 2.2. Apply and monitor operational and maintenance programs and procedures in accordance with site requirements 2.3. Apply and monitor procedures for reviewing and modifying work processes 2.4. Apply and monitor site procedures throughout the work and report, where appropriate, in accordance with site requirements 2.5. Participate in systems ***audit*** and review requirements in accordance with site and legislative requirements 2.6. Apply and monitor emergency response and evacuation plans and procedures in accordance with site requirements
3. Apply systems maintenance procedures	3.1. Schedule and carry out inspections, repair and maintenance activities in accordance with site requirements 3.2. Record, report and monitor maintenance requirements and activities in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply and monitor site services and infrastructure systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - legislative and site requirements and procedures
  - technical information
  - records and reports/briefings and handover details
  - manufacturer's instructions
- apply hazard and risk management procedures
- apply operations, services, fixed plant and infrastructure systems and equipment management procedures
- apply work planning and coordination procedures
- apply procedures to identify training needs
- apply systems maintenance and modification procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply and monitor site services and infrastructure systems:

- legislative, Australian standards and site procedures for site services and infrastructure
- emergency response and evacuation planning processes and techniques
- audit review process and techniques
- isolation and safe control of energy sources including electrical, hydraulic, pneumatic, diesel
- safety design features of site services and infrastructure systems
- computer based systems
- training systems
- fire prevention and fire fighting systems
- safety design features for maintenance of site services and infrastructure systems
- maintenance and modification systems
- stores systems
- roadway maintenance and drilling
- protection systems

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- reticulation systems
- specifications for site services and infrastructure
- identifying and clearly communicating key issues

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the applying and monitoring of site services and infrastructure systems • implementation of appropriate procedures and techniques for the safe, effective and efficient applying and monitoring of site services and infrastructure systems • working with others to plan, prepare and applying the site services and infrastructure systems • provision of clear and timely instruction and supervision by the individual of those involved in applying the site services and infrastructure systems • evidence of the consistent successful applying and monitoring of site services and infrastructure systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and apply the site services and infrastructure systems
	  • provision of clear and timely instruction and supervision by the individual of those involved in applying the site services and infrastructure systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Site services may include:	• water • wastewater • compressed air • fire fighting • fuel/oil • electrical • waste disposal • site monitoring systems • sanitation • communication systems
A **site service system** includes the functions of:	• installation • operations • protection • maintenance • monitoring and recording • reporting process • environmental control (spontaneous combustion, gas, noise, water, heat, dust) • protection systems (guarding, fire protection and suppression, electricity, lightning protection and flame arrestors, ventilation in explosives magazines and earthing)
Infrastructure may include:	• fabrication and construction areas • servicing areas • refuelling points • workshops/garages (underground and surface)

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	• cutting and welding stations • dams • explosives magazines • training facility • bathrooms • HV switch rooms • lamp cabin • laboratory • storehouses • equipment storage areas • on-site residential housing • site access (road, rail, air) • battery charging rooms • water treatment plant • sewerage treatment plant • offices • emergency facilities (First Aid, fire and rescue) • coal preparation plant • stockpile • coal load out • control room • site security • "Fixed Plant"

Systems may include:	• **Ancillary support systems** which may include, but are not limited to:
	  • site plans
	  • signage
	  • stores systems
	  • roadway maintenance
	  • drilling (raise boring, bore hole and inseam drilling)
	• **Emergency response systems** which may include:
	  • refuge chambers and changeover stations
	  • designated escape ways
	  • places of safety
	  • alarm systems
	  • guidance systems
	  • emergency communication systems
	  • escape apparatus and systems
	  • sites rescue capability

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	• first response stations • quick fill stations • **Protection systems** which may include, but are not be limited to: • explosion barriers • electrical protection • compressed air protection • hydraulic protection • environment protection (stone dusting and dust suppression) • mechanical protection • frictional ignition protection • isolation systems • guarding • **Reticulation system** which may be electrical or mechanical and may include: • water management • pumping of solids • fluid reticulation and storage • material reticulation and storage (hydraulic, electric, water, inert and seam gas, and compressed air) • **Communication systems** which may include, but are not limited to: • oral • phones/DAC • radios/PED • telemetry • **Reporting and recording systems** which include site requirements and consist of: • phones • radios • computer systems • oral and written • tagging and access control
Hazards is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Site procedures are also known	• Standard Operating Procedures (SOP)

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as:	• safe working procedures • safe operating procedures • standard working procedures
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI402A Apply and monitor site plant and resource management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers applying and monitoring the site plant and resource management plan in resources and infrastructure industries. It includes: planning, preparing for and initiating management plan activities; and monitoring, adjusting and reporting on the execution of the plan.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, within:

- Civil construction
- Coal mining
- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, prepare for and initiate management plan activities	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***site plant and resource management plan*** activities 1.2. Access and share with team members the ***geological***, ***hydrological and survey data*** required to complete the management plan activities 1.3. Prepare an action plan, in consultation with involved people, which makes best use of the available resource and takes into account the requirements of the management plan and other relevant requirements and procedures 1.4. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of management plan activities 1.5. Issue clear and timely ***instructions*** to people involved for the safe, effective and efficient conduct in the management plan activities in accordance with relevant requirements and procedures
2. Monitor, adjust and report on execution of the plan	2.1. Ensure safe, effective and efficient execution of management plan activities in accordance with relevant requirements and procedures 2.2. Monitor management plan performance to ensure achievement of planned outcomes 2.3. Initiate adjustments to work programs to take into account non achievement of planned outcomes 2.4. Complete and submit reports as required by the management plan and other relevant requirements and procedures 2.5. Recommend changes to improve the safety, efficiency and effectiveness of the management plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply and monitor the site plant and resource management plan:

- apply legislative, organisation and site requirements and procedures
- provide team leadership
- apply procedures for the selection of operational techniques
- apply procedures for the selection and assignment of plant and equipment
- apply work plan development and administration procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply and monitor the site plant and resource management plan:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- site plant and resource management plan
- team leadership techniques
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the applying and monitoring of site plant and resource management plans • implementation of appropriate procedures and techniques for the safe, effective and efficient applying and monitoring of site plant and resource management plans • working with others to plan, prepare, apply and monitor site plant and resource management plans • provision of clear and timely instruction and supervision by the individual of those involved in applying site plant and resource management plans • evidence of the consistent successful applying and monitoring of site plant and resource management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and apply site plant and resource management plans
	  • provision of clear and timely instruction and supervision by the individual of those involved in the application of site plant and resource management plans

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Site plant and resources management plan may cover:	• people • raw feed reserves • water and soil • mobile plant and equipment • processing plant and equipment • maintenance equipment and materials • fuel, oil and lubricants • explosives and blasting accessories • roads, pavements, land and building • security requirements • preserving the value of assets • maintenance requirements • minimising wastage • preserving development consent
Geological data may include relevant site specific information in relation to:	• rock type and characteristics • faults and joints • water tables or other water sources
Hydrological data may include:	• rainfall • surface water, existing streams and dams • catchment areas and runoff characteristics • groundwater and bores
Survey data may include relevant site specific information in relation to:	• floor heights • bench widths • grades

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Resources may include:	• labour • materials • services • equipment
Instructions may be issued in briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout • out-of-bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI501B Implement mine transport systems and production equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers implementing mine transport systems and production equipment in the coal and metalliferous mining industries. It includes: planning and preparing for implementation; and implementing systems for installation, commissioning, operation, maintenance, audit and review.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles, within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the implementation	1.1. Access, interpret and apply ***compliance documentation*** relevant to implementing of mine ***transport systems and production equipment*** 1.2. Identify the purposes of transport systems and production equipment in accordance with the system of mining 1.3. Identify and record site requirements for the implementation of production equipment and/or transport systems 1.4. Access and interpret the ***specifications*** for the required production equipment and/or transport systems 1.5. Identify, clarify and communicate roles and responsibilities 1.6. Identify training needs 1.7. Access and interpret ***site requirements***
2. Implement systems for installation and commissioning	2.1. Identify ***hazards*** associated with the installation and operation of production equipment and transport systems and evaluate and respond to ***risks*** in accordance with established procedures 2.2. Implement emergency response and evacuation plans and procedures in accordance with site requirements 2.3. Integrate new and existing work systems and processes to achieve required outcomes 2.4. Implement standard operating procedures 2.5. Implement site production and transport installation and commissioning procedures 2.6. Implement the program to satisfy identified production and transport training requirements 2.7. Commission equipment and systems in accordance with manufacturer's ***specifications*** and site procedures 2.8. Modify equipment and systems to satisfy required changes arising from the commissioning process
3. Implement systems for the operation and maintenance of	3.1. Implement procedures for the operation of production equipment and transport

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transport systems and production equipment	systems in accordance with legislative, manufacturer's and site requirements 3.2. Implement reporting and recording systems, in accordance with legislative and site requirements 3.3. Implement and apply procedures for reviewing and modifying work processes
4. Implement systems for audit and review	4.1. ***Audit*** production equipment and transport systems standards for compliance with legislative and site requirements 4.2. Audit production and transport ***maintenance*** standards for currency and compliance with legislative and site requirements 4.3. Audit systems and equipment for compliance with legislative and site requirements 4.4. Audit emergency response and evacuation plans and procedures for compliance with site requirements 4.5. Audit reporting and recording systems for production and transport equipment for compliance with legislative and site requirements 4.6. Audit the training program for currency, relevance and compliance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement mine transport systems and production equipment:

- apply legislative, organisation and site requirements and procedures
- provide information/briefings and handover details
- apply hazard identification and risks assessment processes
- apply transport systems and production equipment management procedures
- apply work planning and coordination procedures
- apply training needs identification procedures
- interpret and apply manufacturer's instructions
- apply maintenance and modification surveys and audits

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to implement mine transport systems and production equipment:

- legislative and site requirements and instructions including transport rules, no-go zones for mobile equipment, maintenance schemes, SOPs training, statutory testing on diesel vehicles, battery charging, underground fuel depots, conveyor belts
- site operation procedures
- assessment of geological structures
- site plans
- site design relating to production and transport systems and equipment
- production and transport systems and equipment management requirements
- site environmental monitoring requirements
- risk management procedures
- production and transport systems and equipment statutory inspection requirements
- site transport systems design and functionality
- site reporting procedures
- emergency response and evacuation planning processes and techniques
- maintenance and modification systems
- audit review processes and techniques
- site document control requirements
- production and transport equipment and systems; the types, uses, characteristics and limitations appropriate for safe operation at the site including braking systems

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- energy sources including electrical, hydraulic, pneumatic, diesel
- safety design features of production and transport systems including traffic control devices
- safe operating procedures relating to production and transport equipment
- stores systems
- specification design criteria including access, noise, dust, lighting, ergonomics, remote control, physical clearance, confined space, visibility, seating vibration and machine equipment and personal protection
- development, administration and review of procedures that apply to the system
- raining plan
- standard operating procedures relating to production and transport equipment
- safety design features for maintenance of production and transport equipment
- use of computer based systems for production and transport systems
- fire fighting systems and precaution rules

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementing of mine transport systems and production equipment • implementation of procedures and techniques for the safe, effective and efficient implementing of mine transport systems and production equipment • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the implementing of mine transport systems and production equipment • consistent successful implementing of mine transport systems and production equipment
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the implementing of mine transport systems and production equipment

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	• provision of clear and timely required support and advice on the implementing of mine transport systems and production equipment
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
System may comprise:	• policy, standards, procedures and tools/protocols

Transport systems include capacities for personnel, equipment/materials and may be:	• wheeled transport including:
	  • rubber-tyred man transport
	  • multipurpose vehicles
	  • load haul dump
	  • forklifts
	  • front end loader
	  • skid steer loader
	  • grader
	• rail transport may include:
	  • locomotives (electric/diesel)
	  • rail mounted personnel carriers
	  • rolling stock
	• tracked vehicles may be fixed or mobile and may include:
	  • shearer carrier
	  • personnel carriers
	  • chock recovery vehicles (mules)
	  • site dozer
	• shaft and drift winding systems may include product, personnel and material including:
	  • head gear
	  • cages and skips

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	• winding apparatus • communications • control system discharge • loading facilities • counter balances • conveyor system including: • conveyor belts • drive heads • tail ends transfer points • surge bins • inter seam bins • fabricated bins • chain conveyors • product slurry pumping including: • batching stations • dewatering systems • water reticulation pumping stations
Production equipment (manual or remote control) may include:	• shearer • armoured faced conveyor • pantech • hydraulic roof supports • stage loader • face drill rigs • shuttle cars • ram cars • ratio/breaker feeders • breaker line support • roof bolters (mobile and hand held) • rib bolters • road header • continuous miners • in-seam miners • high wall miners • auger miners • loaders • shotfiring • hydraulic mining
Specifications may include, but not be limited to:	• performance requirements • costs • dimensions

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	• capacity • OHS requirements • training requirements • key selection criteria
Site requirements are also known as:	• Standard Operating Procedures (SOP) • safe working procedures • safe operating procedures • standard working procedures
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives
Maintenance may be divided into:	• predictive • preventative • breakdown

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI502A Implement site plant and resource management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers implementing site plant and resource management plans in resources and infrastructure industries. It includes: preparing for, developing, initiating, monitoring and adjusting the management plan.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles, within:

- Civil construction
- Coal mining
- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for development of the management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the implementation of the ***site plant and resource management plan*** 1.2. Assess the required production/work targets, and other outcomes required in the site or mine plan 1.3. Obtain, review and interpret the site ***geological***, ***hydrological and survey data*** relevant to the operation of the site and the implementation of the management plan 1.4. Identify and document the site plant and ***resources*** that are to be covered by the management plan
2. Develop the management plan	2.1. Involve ***internal and external stakeholders*** in the planning process in a way that uses their contribution effectively and gains their support for the outcomes 2.2. Develop and document the management plan in accordance with the relevant requirements and procedures 2.3. Set targets and other requirements for the site plant 2.4. Identify and acquire the resources required for the implementation of the management plan 2.5. Identify work tasks within the management plan 2.6. Identify and arrange any training required for personnel involved in the application of the management plan 2.7. Prepare and present the management budget in accordance with requirements
3. Initiate, monitor and adjust the implementation of the management plan	3.1. Assign responsibilities and issue and explain the management plan to team members and others involved, for the safe, effective and efficient implementation of the plan 3.2. Provide timely ongoing support and advice to those applying the management plan 3.3. Ensure records and reports are maintained

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	and issued in accordance with the management plan requirements and other relevant ***legislative and organisational requirements*** 3.4. ***Monitor*** the management plan performance against the organisation and site's requirements and the budget; resolve anomalies in consultation with relevant stakeholders and issue appropriate instructions for adjustments to the plan and/or its implementation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement site plant and resource management plans:

- apply legislative, organisation and site requirements and procedures
- provide team leadership
- apply procedures for the selection of administrative and operational techniques
- apply work plan development, initiation and administration requirements and procedures
- interpret and apply operational and maintenance data

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement site plant and resource management plans:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- organisation plant and resource management policy, objectives and procedures (where they exist)
- mine plant and resource management options and procedures
- administrative and operational techniques required for execution of the plan
- work planning techniques
- team leadership techniques
- consultative and coaching techniques
- work monitoring methods
- recording and reporting systems
- training systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementing of site plant and resource management plans • implementation of procedures and techniques for the safe, effective and efficient implementing of site plant and resource management plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the implementing of site plant and resource management plans • consistent successful implementing of site plant and resource management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the implementing of site plant and resource management plans

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	• provision of clear and timely required support and advice on the implementing of site plant and resource management plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Site plant and resource management plan may cover:	• risk management requirements • occupational health and safety requirements • security requirements • preserve the value of assets • maintenance requirements • minimising wastage • preserving development consent • people • raw feed reserves • mine water • soil • mobile plant and equipment • processing plant and equipment • maintenance equipment and materials • fuel, oil and lubricants • explosives and blasting accessories • land and buildings • finances
Geological data may include:	• soil quality, distribution and quantities • coal resource quality, distribution and quantities • faults, joints and other geological features
Hydrological data may include:	• rainfall • surface water, existing streams and dams • catchment areas and runoff characteristics

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	• groundwater and bores
Survey data may include:	• site and neighbouring land form • site and neighbouring boundaries and structures • site and neighbouring roads and other infrastructure • approved limits of extraction • title details
Resources may include:	• budgets • skilled labour • materials • services • fuel, power • plant and • equipment
Internal and external stakeholders may include:	• organisation • customers • site and offsite employees • contractors • equipment suppliers • geologists, surveyors and/or draughtspersons • regulatory authorities representatives • community representatives • site neighbours

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI503B Implement site services and infrastructure systems

Modification History

Not applicable.

Unit Descriptor

This unit covers implementing site services and infrastructure systems in the coal and metalliferous mining industries. It includes planning and preparing for implementation; and implementing installation and commissioning procedures, systems for operation and maintenance of services and infrastructure, and systems for auditing and reviewing site services, infrastructure and equipment.

Application of the Unit

This unit is appropriate for those working in management technical specialist roles, within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for implementation	1.1. Access, interpret and apply ***compliance documentation*** relevant to implementing ***site services*** and ***infrastructure*** systems 1.2. Identify the purpose of site services and infrastructure systems and equipment in accordance with the system of mining 1.3. Identify and record ***site requirements*** for the implementation of site services and infrastructure systems and equipment 1.4. Access, identify and interpret the specification for the required site services and infrastructure equipment 1.5. Identify and communicate roles and responsibilities 1.6. Identify training needs 1.7. Access and interpret ***site procedures***
2. Implement installation and commissioning procedures	2.1. Identify ***hazards*** associated with the installation of site services and infrastructure equipment and systems, and evaluate and respond to ***risks*** 2.2. Integrate new and existing work systems/processes/plant to achieve required outcomes 2.3. Implement site procedures 2.4. Implement site services and infrastructure transport and installation procedures in accordance with ***manufacturer's specifications*** and site requirements 2.5. Implement site services and infrastructure commissioning procedures 2.6. Implement the site services and infrastructure training plan 2.7. Identify and implement changes to equipment and systems to satisfy required changes arising from the commissioning process 2.8. Implement emergency response and evacuation plans and procedures in accordance with site requirements
3. Implement systems for the operation and maintenance of	3.1. Implement operational procedures for site services and infrastructure systems and

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site services and infrastructure and equipment	equipment according to site requirements 3.2. Implement maintenance procedures for site services and infrastructure systems and equipment according to manufacturer's and site requirements 3.3. Implement and apply procedures for reviewing and modifying work processes
4. Implement systems for audit and review of site services and infrastructure and equipment	4.1. ***Audit*** site services and infrastructure system and equipment for compliance with legislative and site requirements 4.2. Audit site services and infrastructure system and equipment maintenance for currency and compliance with legislative and site requirements 4.3. Audit ***reporting and recording systems*** for compliance with legislative and site requirements 4.4. Audit ***emergency response*** and evacuation plans and procedures for compliance with site requirements 4.5. Audit the training plan for currency, relevance and compliance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement site services and infrastructure systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - briefings and handover details
  - site/legislative requirements
  - records and reports
- apply hazard identification and risk management processes
- apply work planning and coordination requirements and procedures
- apply training needs analysis procedures
- interpret and apply manufacturer instructions
- apply maintenance and modification systems implementation requirements and procedures

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to implement site services and infrastructure systems:

- legislative, Australian standards and site specific requirements
- emergency response and disaster planning processes and techniques
- audit review process and techniques
- site procedures
- site design relating to site services and infrastructure systems
- energy sources, including electrical, hydraulic, compressed air, diesel
- safety design features of site services and infrastructure systems
- computer based systems
- training programs
- fire fighting systems and precaution rules
- safety design features for maintenance of site services and infrastructure systems
- maintenance and modification systems
- stores systems
- roadway maintenance and drilling
- protection systems

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- reticulation systems
- specifications for site services and infrastructure

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for implementing site services and infrastructure systems • implementation of procedures and techniques for the safe, effective and efficient implementing of site services and infrastructure systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the implementation of site services and infrastructure systems • consistent successful implementation of site services and infrastructure systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the implementation of site services and infrastructure systems
	  • provision of clear and timely required

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	support and advice on the implementation of site services and infrastructure systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Site services may include:	• water • wastewater • compressed air • fire fighting • fuel • electrical • waste disposal • condition monitoring • sanitation
Infrastructure may include:	• fabrication and construction areas • servicing areas • refuelling points • workshops • dams • explosives magazines • training facility • bathrooms • HV switch rooms • lamp cabin • laboratory • store-houses • equipment storage areas • on site residential housing • site access (road, rail, air) • battery charging rooms

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	• water treatment plant • sewerage treatment plant • offices • emergency facilities (First Aid, fire and rescue) • coal preparation plant • stockpile • coal load out • control room • "Fixed Plant"
Site requirements may include:	• site plans • electrical rules • gas drainage • compressed air • electrical/mechanical equipment • inspection requirement • environmental management • explosion barriers • communication • emergency procedures • risk management • recording and reporting • sites rescue • OHS • manufacturer instructions • standard work procedures • training • fire fighting • handling and storage of dangerous goods • local government • power authorities
Site procedures are also known as:	• standard operating procedures (SOP) • safe working procedures • safe operating procedures • standard working procedures
Site procedures may apply to:	• transport systems • conveyor systems • systems of mining • ventilation system • gas management • site water management • site communication systems

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Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives • it is measured in terms of consequences and likelihood
Manufacturer's specifications may include:	• performance requirements • costs • dimensions • capacity • occupational health and safety requirements • training requirements • key selection criteria
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives
Reporting and recording systems include site requirements and consist of:	• phones • radios • computer systems • verbal and written
Emergency response systems may include:	• refuge chambers and changeover stations • designated escape ways • places of safety • alarm systems • guidance systems • emergency communication systems • escape apparatus and systems • sites rescue capability • first response stations • quick fill stations

Unit Sector(s)

Resources and Infrastructure

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI504A Select and install surface plant and equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers selecting and installing surface plant and equipment in the metalliferous mining and extractive industries. It includes: identifying the need, selecting, justifying and recommending acquisition of plant and equipment; managing the installation and commissioning of plant and equipment; and reviewing and reporting on the outcomes of the acquisition of plant and equipment.

Application of the Unit

This unit is appropriate for those working in management and technical specialist roles, within:

- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify plant and/or equipment need	1.1. Access, interpret and apply the ***compliance documentation*** relevant to the selecting and installing of surface plant and equipment 1.2. Involve internal and external stakeholders in the identification process in a way that uses their contribution effectively and gains their support for the outcomes 1.3. Identify ***parameters*** to be applied in the selection of the plant and/or equipment based on ***relevant requirements*** 1.4. Draft the specification for plant and/or equipment that meets the requirements of the identified parameters
2. Select plant and/or equipment	2.1. Involve internal and external stakeholders in the selection process in a way that uses their contribution effectively and gains their support for the outcomes 2.2. Identify options that meet the selection parameters 2.3. Gather, validate and assess the data on the various options relevant to the selection parameters 2.4. Analyse the various options and select the option that best meets the required parameters
3. Justify and recommend acquisition of plant/ equipment	3.1. Involve internal and external stakeholders in the justification and recommendation process in a way that uses their contribution effectively and gains their support for the outcomes 3.2. Draft the recommendation for the selected plant and/or equipment 3.3. Present the recommendation for plant and/or equipment to be acquired relevant persons
4. Manage the installation of plant and/or equipment	4.1. Inform internal and external stakeholders of the outcomes of the approval process and involve them in the planning for and conduct of the installation of plant and/or equipment in a way that uses their contribution effectively and gains their

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	support for the outcomes 4.2. Select suppliers and contractors 4.3. Issue orders and/or contracts for the initiation of the project 4.4. Supervise and coordinate the safe, effective and efficient installation of the plant and/or equipment 4.5. Ensure records of cost are maintained and monitor costs against the budget
5. Manage the commission of plant and/or equipment	5.1. Involve internal and external stakeholders in the commissioning process in a way that uses their contribution effectively and gains their support for the outcomes 5.2. Conduct risk assessment of new plant/equipment to determine treatment measures to be applied 5.3. Develop or revise operating procedures to take into account the requirements and characteristics of the new plan and/or equipment and the outcomes of the risk assessment 5.4. Provide training for all relevant personnel to cover any requirements of the new plant and/or equipment and the outcomes of the risk assessment 5.5. Supervise the operation, testing and adjustment of the plant/equipment and asses and record its performance against the specification 5.6. Acknowledge the completion of the installation and commissioning of the plant and/or equipment in accordance with the terms of the contract
6. Review and report on outcome of plant and/or equipment acquisition	6.1. Develop strategies and reporting mechanisms for the ongoing reporting of performance of plant and/or equipment 6.2. Ensure installation records and reports are maintained and forwarded to relevant personnel 6.3. Establish feedback mechanisms to ensure that the planning processes and outcomes are continuously improved 6.4. Review and report on the performance of suppliers or contractors and plant and

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	equipment against specification and contract requirements and general performance

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to select and install surface plant and equipment:

- apply legislative, organisation and site requirements and procedures
- apply procedures for the drafting and interpretation of specifications/interpret tender documents
- apply procedures for the drafting and interpretation of contract management documents
- apply and manage purchasing procedures
- apply capital expenditure applications preparation requirements and procedures
- apply contract management requirements and procedures
- apply procedures for the assessing of operating capacity
- apply procedures for the assessing of the compatibility of items of plant and equipment
- apply procedures for determining ownership cost
- apply procedures for determining operating cost targets
- apply procedures for determining product support requirements
- apply procedures for identifying market considerations
- apply procedures for identifying operational considerations

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to select and install surface plant and equipment:

- risk management
- statutory compliance requirements
- development approval, mining licences (or equivalent)
- OHS requirements
- environmental management requirements
- quality requirements
- purchasing requirements and procedures
- capital expenditure requirements and procedures
- contract management requirements and procedures
- administration requirements (including records and reports)
- plant and equipment characteristics

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- specification requirements
- contract requirements
- operating cost record and analysis procedures
- product support requirements
- market information
- operational requirements
- approved suppliers

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the selection and installation of surface plant and equipment • implementation of procedures and techniques for the safe, effective and efficient selection and installation of surface plant and equipment • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the selection and installation surface plant and equipment • consistent successful selection and installation of surface plant and equipment
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of plant and equipment that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the selection and installation of surface plant and equipment
	  • provision of clear and timely required

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	support and advice on the selection and installation surface plant and equipment
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Parameters may include:	• physical size • operating capacity • other performance criteria • quality criteria • occupational health, safety and environmental features required • compatibility with existing plant and equipment • capital cost limitation • ownership cost • operating cost targets • nominated suppliers • product support requirements • training to be provided by supplier • maximum downtime requirements
Relevant requirements may include:	• market considerations • operational considerations • compatibility with existing plant and equipment • capital cost limitations • limitations on downtime • approved suppliers

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Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI505A Implement the surface mine mechanical plant management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of the surface mine mechanical plant management plan in the coal mining industry. It includes: planning and preparing for the implementation; implementing the hazards and risk control options and measures; and auditing the management plan.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, managing or advising on mine mechanical plant within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the implementation of the management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the implementation of the surface ***mine mechanical plant management plan*** 1.2. Access, interpret and clarify the legislative and site requirements related to surface mine mechanical plant management plan 1.3. Access, interpret and clarify the surface mine mechanical plant management plan 1.4. Identify and communicate roles and responsibilities, as specified in the surface ***mine mechanical plant management system*** to all involved persons 1.5. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the surface mine mechanical plant management plan 1.6. Identify ***training*** needs 1.7. Encourage, receive, review and where appropriate, implement suggestions and recommendations for changes to surface mine mechanical plant management procedures
2. Implement the hazards and risk control options and measures	2.1. Implement the ***hazardous environment control procedures*** 2.2. Implement fire protection and prevention procedures on mechanical equipment 2.3. Implement procedures to control noise, dust, and other emissions initiated from or created by mechanical equipment 2.4. Implement procedures for working at heights 2.5. Implement procedures to maintain the integrity of safety critical functions of mechanical equipment 2.6. Implement procedures to control hazards in lifting and towing systems for mechanical equipment 2.7. Implement procedures to control ***hazards associated with transport*** equipment and other plant

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	2.8. Implement procedures to protect people in their ***interrelationship with mechanical equipment*** in the surface environment 2.9. Implement procedures to control hazards for energy dissipation and isolation systems on mechanical equipment 2.10. Implement procedures to control hazardous substances initiated from or used by mechanical equipment 2.11. Implement procedures for the interaction and/or failure of transport and production equipment 2.12. Record and report monitoring and information system data in accordance with the surface mine mechanical plant management plan
3. Audit surface the management plan	3.1. Review the effectiveness of the surface mine mechanical plant management plan in accordance with the requirement of the mine mechanical plant management plan 3.2. ***Audit*** the ***maintenance*** program and procedures in accordance with the surface mine mechanical plant management plan and statutory requirements 3.3. Audit recording and reporting systems in accordance with the surface mine mechanical plant management plan 3.4. Audit the mechanical plant management training program for currency, relevance and compliance with the surface mine mechanical plant management plan 3.5. Report on non compliance as revealed by audit

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement the surface mine mechanical plant management plan:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- apply hazard identification and risk management requirements and procedures
- apply work planning and coordinating requirements and procedures
- apply training needs analysis processes
- interpret and apply manufacturer instructions
- apply effective communication techniques
- apply and monitor data from monitoring systems and equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement the surface mine mechanical plant management plan:

- legislative and statutory requirements for mechanical plant and equipment
- the emergency response and disaster processes and techniques
- audit review processes and techniques
- mechanical engineering standards
- safety critical function of mechanical equipment
- mine operating procedures for mechanical plant and equipment
- options to control hazards and risks relating to mine mechanical plant and equipment, including fire protection and prevention, lifting and towing systems, storage of hazardous substances and the interrelationship between people and mechanical equipment
- energy sources, including protection and reticulation systems for electrical, hydraulic, compressed air, diesel
- mine fires; the types, sources of ignition and possible impacts on plant and equipment
- a basic knowledge of computer based systems relating to the monitoring, and

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operation of mine mechanical plant and equipment • fire fighting systems • specification for mine plant and equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation of surface mine mechanical plant management plans • implementation of procedures and techniques for the safe, effective and efficient implementation of surface mine mechanical plant management plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the implementation of surface mine mechanical plant management plans • consistent successful implementation of surface mine mechanical plant management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the implementation of surface mine mechanical plant management plans

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	• provision of clear and timely required support and advice on the implementation of surface mine mechanical plant management plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mine mechanical plant management plan establishes the procedures for maintaining a safe environment and may include:	• hazard identification and quantification • risk assessment • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review ***and may include procedures for***: • control of hazardous environments • fire protection and prevention • control of noise, dust and other emissions initiated from or created by mechanical equipment • mine plan • working at heights • lifting and towing systems • hazards associated with transport equipment and other plant • inter relationship between people and mechanical equipment • control of hazards for energy dissipation and isolation • control of hazardous substances • interaction and/or failure of transport and production equipment • training and education

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Training applies to:	• mine workers • tradespeople • permanent employees • contractors • mine officials • other special requirements
Mechanical plant management system establishes procedures for maintaining safe equipment, including:	• hazard identification and quantification • risk management • consultation • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Hazardous environment may include:	• coal storage bins • reclaim tunnels • confined spaces • gases • restricted work area • flammable environments are those related to heat sources, fuel sources and ignition sources, e.g. engine wiring, hydraulics in engine bays
Hazards and risk **control procedures** identified in the mine mechanical plant management plan may include:	• explosion initiate from mechanical equipment • fire initiate and/or supported by mechanical equipment • hazardous substances used for mechanical equipment • toxic substances generated by mechanical equipment • the release of uncontrolled kinetic energy (unplanned movements) on mechanical equipment • the interaction and/or failure of transport and production equipment • the use and storage of high pressure fluids • moving and rotating parts on mechanical equipment • fluid injection incidents • dangerous goods, e.g. LPG, flammable liquids

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Hazards associated with transport equipment and other plant may include:	• tyre and rim failure • interaction between light and heavy vehicles • overhead power lines • restricted vision • equipment working around draglines
Interrelationship with mechanical equipment in the surface environment may include:	• access systems • guarding • remote and/or automatic control • restricted working areas • safe standings/operating zones • ergonomics and vibrations • vision • manual handling • working at heights • emergency egress systems
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation policy and objectives
Maintenance is to restore or keep at the level at which it was originally designed, by:	• inspecting and testing plant and equipment • monitoring plant and equipment • servicing equipment • repairing equipment • overhauling equipment

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI506A Implement, monitor, rectify and report on inventory control system

Modification History

Not applicable.

Unit Descriptor

This unit covers the requirements to implement, monitor, rectify and report on inventory control system in the resources and infrastructure industries. It includes: implementing, monitoring, rectifying and reporting on inventory control system.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, managing or advising on inventory control systems within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Implement inventory control system	1.1. Access, interpret and apply ***compliance documentation*** relevant to implementing, monitoring, rectifying and reporting on inventory control systems 1.2. Identify ***resources***, both human and technical, required to support implementation, and put in place 1.3. Implement ***record keeping procedures*** 1.4. Implement ***processes for controlling stock*** 1.5. Implement reporting processes 1.6. Communicate system to stakeholders
2. Monitor inventory control system	2.1. Establish procedures for monitoring inventory control system 2.2. Audit inventory control system according to ***organisational*** specifications 2.3. Implement discrepancy reporting procedures 2.4. Supervise production of inventory system reports 2.5. Analyse inventory reports 2.6. Identify major trends 2.7. Identify and document areas requiring adjustment and notify relevant personnel
3. Rectify inventory control system	3.1. Develop procedures for adjusting procedures and performance 3.2. Undertake modifications to inventory control system according to organisational procedures 3.3. Test modifications and make further modifications where necessary 3.4. Record and report modifications to relevant personnel
4. Report on inventory control system	4.1. Document results of inventory control in accordance with organisational specifications 4.2. Inform relevant parties of the results of inventory control according to organisation's guidelines

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement, monitor, rectify and report on inventory control system:

- apply legislative, organisation and site requirements and procedures
- apply procedures for identifying and interpreting trends from inventory records
- read, interpret and apply inventory information
- apply diagnostic techniques
- apply inventory system relationship to manufacturing process
- apply inventory system recording and reporting requirements and procedures
- apply records maintenance requirements
- apply oral and written communication techniques
- apply safe working practices
- apply standard operating procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement, monitor, rectify and report on inventory control system:

- site and equipment safety requirements
- monitoring of documentation
- auditing procedures
- software characteristics, technical capabilities and limitations
- reporting systems
- archiving
- record keeping procedures
- sources of stock / inventory information
- continuous improvement processes
- work roles

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to implement, monitor, rectify and report on inventory control system • implementation of procedures and techniques to safely, effectively and efficiently implement, monitor, rectify and report on inventory control system • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of pit plans that best meet the required outcomes • working with others to implement, monitor, rectify and report on inventory control system • consistently and successfully implement, monitor, rectify and report on inventory control system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to implement, monitor, rectify and report on inventory control system

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	• provision of clear and timely required support and advice on the application of inventory control systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Resources required include:	• clerical / computer applications for maintaining records • technical support • data storage facilities
Record keeping procedures include:	• requisition • purchasing • shipping • invoicing
Processes for controlling stock include:	• inventory lists • stock lists
Organisational systems, **policies and procedures** may include:	• quality systems • standard operating procedures • standard work practices • organisational commitment • corporate policy • community consultation and involvement • objectives and targets • documentation and targets • documentation and records • responsibility and reporting structure • inventory review audits • supply and financial monitoring and measurement • organisational Code of Practice, Ethical Codes

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Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI507A Implement the underground coal mine mechanical plant management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers implementing the mechanical plant management plan in underground coal mine. It includes: planning and preparing for the implementation of the management plan; implementing the hazards and risk control options and measures; and auditing the management plan.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the implementation of the management plan	1.1. Access, ***interpret*** and apply ***compliance documentation*** relevant to implement the mechanical plant management plan in underground coal mine 1.2. Access, interpret and clarify the underground ***mine mechanical plant management plan*** 1.3. Identify and communicate roles and responsibilities, as specified in the underground Mine Mechanical Plant Management Plan to all involved persons 1.4. Identify, forecast, obtain and allocate / schedule resources required for the implementation of the underground Mine Mechanical Plant Management Plan 1.5. Identify ***training*** needs. 1.6. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to underground ***mine mechanical plant management procedures***
2. Implement the hazards and risk control options and measures	2.1. Implement procedures for the explosion protection of mechanical equipment 2.2. Implement procedures to control flammable environment 2.3. Implement procedures to control ***hazards*** caused by disruption to the mine ventilation system 2.4. Implement fire protection and prevention procedures on mechanical equipment 2.5. Implement procedures to control engine pollutants. initiated from or created by mechanical equipment 2.6. Implement procedures for control of hazardous substances initiated from or used by mechanical equipment 2.7. Implement procedures to maintain the integrity of ***safety critical functions*** of mechanical equipment 2.8. Implement procedures to ***control hazards*** in lifting and towing systems for

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	mechanical equipment 2.9. Implement procedures to protect people in their ***interrelationship with mechanical equipment*** in the underground ***environment*** 2.10. Implement procedures to control hazards for energy dissipation and isolation systems on mechanical equipment 2.11. Implement procedures to prevent failure of winding and personnel transport equipment
3. Audit the management plan	3.1. Review the effectiveness of the underground mine ***mechanical plant management systems*** in accordance with the requirement of the underground Mine Mechanical Plant Management Plan 3.2. ***Audit the maintenance*** program and procedures in accordance with the underground Mine Mechanical Plant Management Plan and statutory requirements 3.3. Audit recording and reporting systems in accordance with the underground Mine Mechanical Plant Management Plan 3.4. Audit the mechanical plant management training program for currency, relevance and compliance with the underground Mine Mechanical Plant Management Plan 3.5. Report on non-compliances revealed by audit

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement the mechanical plant management plan in underground coal mine:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - site / legislative requirements
  - records and reports
  - briefings and handover details
- apply hazard identification and risks management procedures
- apply plant and equipment management requirements and procedures
- apply work planning and coordination procedures
- apply training needs analysis
- interpret and apply manufacturer instructions
- apply effective communication techniques
- apply and monitor data from monitoring systems and equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement the mechanical plant management plan in underground coal mine:

- legislative and statutory requirements for mechanical plant and equipment
- the emergency response and disaster processes and techniques
- audit review processes and techniques
- mechanical engineering standards
- safety critical function of mechanical equipment
- mine operating procedures for mechanical plant and equipment
- explosion protection techniques
- hazards associated with diesel engines
- options to control hazards and risks relating to mine mechanical plant and equipment, including fire protection and prevention, lifting and towing systems, storage of
- hazardous substances and the interrelationship between people and mechanical equipment
- energy sources, including protection and reticulation systems for electrical,

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hydraulic, compressed air, diesel

- mine fires; the types, sources of ignition and possible impacts on plant and equipment
- a basic knowledge of computer based systems relating to the monitoring, and operation of mine mechanical plant and equipment
- fire fighting systems
- specification for mine plant and equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementing of mechanical plant management plans in underground coal mine • implementation of procedures and techniques for the safe, effective and efficient implementing of mechanical plant management plans in underground coal mine • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to implement mechanical plant management plans in underground coal mine • consistent successful implementing of mechanical plant management plans in underground coal mine
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to implement mechanical plant management plans in

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	underground coal mine • provision of clear and timely required support and advice on the implementing of mechanical plant management plans in underground coal mine
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Interpret is defined as:	• the understanding needed by the person within their job role
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Training applies to:	• mine workers • tradespeople • permanent employees • contractors • mine officials • other special requirements
Mine mechanical plant management plan establishes the procedures for maintaining a safe environment and may include:	• hazard identification and quantification • risk assessment • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review ***And may include procedures for***: • explosion protection of mechanical equipment • control of flammable environments • fire protection and prevention • control of hazardous substances initiated from or created by mechanical equipment mine plan • disruption to the mine ventilation system, • lifting and towing systems • inter relationship between people and mechanical equipment

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	• control of hazards for energy dissipation and isolation • control of hazardous substances • failure of winding and personnel transport equipment • training and education
Safe work **procedure** may include:	• cutting and welding in coal mines • energy isolation and dissipation • confined spaces
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Hazards and risk **control** measures identified in the underground mine mechanical plant management plan may include:	• explosion protection of mechanical equipment • fire initiate and/or supported by mechanical equipment • hazardous substances used for mechanical equipment • toxic substances generated by mechanical equipment • the release of uncontrolled kinetic energy (unplanned movements) on mechanical equipment • the interaction and/or failure of transport and production equipment • the use and storage of high pressure fluids • moving and rotating parts on mechanical equipment • fluid injection incidents • dangerous goods, e.g. LPG, flammable liquids
Hazardous environment may include but is not limited to:	• coal storage bins • reclaim tunnels • confined spaces • gases • restricted work area • flammable environments are those related to heat sources, fuel sources and ignition sources for e.g. engine wiring, hydraulics in engine bays
Interrelationship with mechanical equipment in the underground environment may include:	• access systems • guarding • remote and/or automatic control • restricted working areas • safe standings/operating zones • ergonomics and vibrations

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	• vision • manual handling • working at heights • emergency egress systems
Hazards associated with **transport** equipment and other plant may include:	• tyre and rim failure • interaction between light and heavy vehicles • overhead power lines • restricted vision • equipment working around draglines
Mechanical plant management system establishes procedures for maintaining safe equipment, including:	• hazard identification and quantification • risk management • consultation • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives
Maintenance is to restore or keep at the level to which it was originally designed, by:	• inspection and testing of plant and equipment • monitoring of plant and equipment • servicing of equipment • repairing of equipment • overhauling of equipment

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIRAI508A Implement mine services systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementing of mine services systems in the coal mining industry. It includes: planning and preparing for implementation of mine services systems and equipment; implementing installation and commissioning procedures; implementing systems for the operation and maintenance of mine services systems and equipment; and implementing systems for audit, review of mine services systems and equipment.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, managing or advising on mine services systems within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for implementation of mine services systems and equipment	1.1. Access, interpret and apply ***compliance documentation*** relevant to the implementing of mine services systems 1.2. Identify the purpose of ***mine services systems*** and equipment in accordance with the system of mining 1.3. Identify and record ***site requirements*** for the implementation of mine services systems and equipment 1.4. Identify and implement ***safety systems*** 1.5. Access and interpret the ***specification*** for the required mine services equipment 1.6. Identify, clarify and communicate roles and responsibilities 1.7. Implement the program to satisfy identified mine services training requirements 1.8. Access and interpret standard operating procedures
2. Implement installation and commissioning procedures	2.1. Identify ***hazards*** associated with the installation of mine services equipment and systems, and evaluate and respond to ***risks***, in accordance with established procedures 2.2. Integrate new and existing work systems and processes to achieve optimum performance 2.3. Implement standard operating procedures 2.4. Implement mine services equipment installation and commissioning procedures 2.5. Install equipment at the worksite in accordance with manufacturer instructions and site procedures 2.6. Commission equipment and systems in accordance with the manufacturer specifications and site procedures 2.7. Modify equipment and systems to satisfy required changes arising from the commission process 2.8. Implement ***emergency response*** and evacuation plans and procedures in accordance with site requirements 2.9. Implement ***protection systems*** in

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	accordance with site requirements
3. Implement systems for the operation and maintenance of mine services systems and equipment	3.1. Implement operational procedures for mine services systems and equipment according to site requirements 3.2. Implement maintenance procedures for mine services systems and equipment according to manufacturer and site requirements 3.3. Implement and apply procedures for reviewing and modifying work processes
4. Implement systems for audit, review of mine services systems and equipment	4.1. Audit mine services system standards for compliance with legislative and site requirements 4.2. Audit mine services and equipment maintenance standards for currency and compliance with legislative and site requirements 4.3. Audit mine services and equipment for compliance with legislative and site requirements 4.4. Audit ***reporting and recording systems*** for compliance with legislative and site requirements 4.5. Audit emergency response and evacuation plans and procedures for compliance with site requirements 4.6. Audit the training program for currency, relevance and compliance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement mine services systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- apply hazard identification and risk management processes
- apply work planning and coordination requirements and procedures
- apply training needs analysis
- interpret and apply manufacturer instructions
- apply maintenance survey procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement mine services systems:

- legislative Australian standards and site-specific requirements
- emergency response and disaster planning processes and techniques
- audit review process and techniques
- open cut mine operating procedures
- mine design relating to mine services systems
- power sources, including electrical, hydraulic, compressed air, diesel
- safety design features of mine services systems
- computer based systems
- training programs
- fire fighting systems and precaution rules
- safety design features for maintenance of mine services systems
- maintenance surveys
- stores systems
- training systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to implement mine services systems • implementation of procedures and techniques for the safe, effective and efficient implementation of mine services systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the implementation of mine services systems • consistent successful implementation of mine services systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to implement mine services systems
	  • provision of clear and timely required support and advice on the application of mine services systems

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Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Mine services systems may include:	• design
	• development
	• establishment
	• installation
	• operations
	• protection
	• maintenance
	• monitoring
	• recording
	• reporting process
	• communication systems, including:
	  • oral
	  • phones
	  • radios
	  • electronic
	  • microwave
	  • telemetry

Site requirements may include:	• mine plan • electrical rules • electrical/mechanical equipment • communications • emergency procedures • risk management • recording and reporting • mines rescue

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	• OHS • manufacturer's instructions • standard work procedures • training • fire fighting • handling and storage of dangerous goods • local government • local power authority
Safety systems may include:	• legislation (legal requirements) • location • site layout • purpose • environmental control (spontaneous combustion, gas, noise, water, heat, dust) • protection systems (guarding, fire protection and suppression, electricity, lightning arresters, ventilation in explosives magazines and earthing)
Specifications may include:	• performance requirements • costs • dimensions • capacity • safety and health requirements • training requirements • key selection criteria
Standard operating procedures (SOP) are also known as:	• safe working procedures, safe operating procedures and standard working procedures
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss (definition from AS/NZS 4360:1999 Risk Management)
Mine services may include:	• power (air, gas, electricity, water, diesel, low energy source) • water, wastewater • fire fighting • gas drainage • fuel • waste disposal • condition monitoring • dust suppression and refrigeration • safety services, including: • risk assessment process

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	• fire fighting • First Aid • mines rescue
Risk is defined as:	• the chance of something happening that will have an impact upon objectives • it is measured in terms of consequences and likelihood
Specifications may include:	• performance requirements • costs • dimensions • capacity • OHS requirements • training requirements • key selection criteria
Emergency response systems may include:	• refuge chamber • designated escape ways • evacuation procedures • alarm systems • guidance systems • emergency communication systems • self-aided escape apparatus • mines rescue capability
Protection systems may include:	• explosion barriers • electrical protection • compressed air protection • hydraulic protection • environment protection • falling and rollover protection • mechanical protection • frictional ignition protection • guarding • personal protection
Audit is defined as:	• "a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation policy and objectives" (AS/NZS 4804: 2001)
Reporting and recording systems include site requirements	• phones • radios • computer systems

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and may include:	• verbal and written

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI509A Implement mine fixed plant and infrastructure systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementing mine fixed plant and infrastructure systems in the coal mining industry. It includes planning and preparing for the implementation of the systems; implementing installation and commissioning procedures; implementing systems for the operation and maintenance; and implementing systems for audit and review of fixed plant and infrastructure.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, managing or advising on mine fixed plant and infrastructure systems within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the implementation of mine fixed plant and infrastructure systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to implementing mine fixed plant and infrastructure systems 1.2. Identify the requirements of ***fixed plant*** and ***infrastructure*** in accordance with mine design and system of mining 1.3. Identify site requirements for the implementation of fixed plant and infrastructure 1.4. Identify and implement safety systems 1.5. Identify and interpret the specification for the required fixed plant 1.6. Identify, clarify and communicate roles and responsibilities 1.7. Implement the program to satisfy identified fixed plant and infrastructure training requirements 1.8. Assess and interpret safe operating procedures
2. Implement installation and commissioning procedures for fixed plant and infrastructure	2.1. Identify ***hazards*** associated with the installation of fixed plant and infrastructure and evaluate and respond to ***risks*** in accordance with established procedures 2.2. Integrate new and existing fixed plant and infrastructure and processes to achieve optimum performance 2.3. Implement safe operating procedures 2.4. Implement fixed plant and infrastructure installation and commissioning procedures 2.5. Install fixed plant and infrastructure at the worksite in accordance with manufacturer instructions and site procedures 2.6. Commission fixed plant and infrastructure systems in accordance with manufacturer's instructions and site procedures 2.7. Modify systems to satisfy required changes arising from the commissioning process 2.8. Implement ***emergency response*** and evacuation plans and procedures in accordance with site requirements

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3. Implement systems for the operation and maintenance of fixed plant and infrastructure	3.1. Implement operational procedures for fixed plant and infrastructure according to site requirements 3.2. Implement maintenance procedures for fixed plant and infrastructure according to manufacturer and site requirements 3.3. Implement and apply procedures for reviewing and modifying work processes
4. Implement systems for audit and review of fixed plant and infrastructure	4.1. ***Audit*** fixed plant and infrastructure standards for compliance with statutory and site requirements 4.2. Audit fixed plant and infrastructure maintenance standards for currency and compliance with statutory and site requirements 4.3. Audit fixed plant and infrastructure for compliance with site standards 4.4. Audit reporting and recording systems for fixed plant and equipment and infrastructure for compliance with statutory and site requirements 4.5. Audit the fixed plant and infrastructure training program for currency, relevance and compliance with site requirements 4.6. Audit emergency response and evacuation plans and procedures for compliance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement mine fixed plant and infrastructure systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- apply hazard identification and risk management processes
- apply work planning and coordination procedures
- apply training needs analysis
- interpret and apply manufacturers' instructions
- apply maintenance survey procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement mine fixed plant and infrastructure systems:

- legislative, statutory, Australian standards and site-specific requirements for plant and infrastructure, including:
  - mine plan
  - electrical rules
  - electrical/mechanical equipment
  - communications
  - emergency procedures
  - risk management
  - recording and reporting
  - mines rescue
  - OHS
  - Manufacturer's instructions
  - standard work procedures
  - training
  - fire fighting

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- handling and storage of dangerous goods
- local government requirement
- local power authority
- open cut mine operations systems and procedures
- stores systems
- protection systems
- reticulation systems
- specifications for fixed plant and infrastructure
- audit processes
- mine design principles and procedures relating to fixed plant and infrastructure
- power sources, including electrical, hydraulic, pneumatic and diesel
- computer based systems
- training programs
- fire fighting systems and precaution rules
- safety design features for maintenance of fixed plant and infrastructure
- maintenance surveys
- training systems
- emergency response and evacuation planning processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to implement mine fixed plant and infrastructure systems • implementation of procedures and techniques for the safe, effective and efficient implementation of mine fixed plant and infrastructure systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to implement mine fixed plant and infrastructure systems • consistent successful implementing of mine fixed plant and infrastructure systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to implement mine fixed plant and infrastructure systems
	  • provision of clear and timely required support and advice on the applying the

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	mine fixed plant and infrastructure systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Fixed plant may include:	• crushers • screens • conveyors • feeders • coal or waste handling systems

Infrastructure may include:	• roads and railways
	• dams
	• fencing
	• stockpile/product bays
	• salvage area
	• reticulation systems
	• car park
	• communications
	• power supply
	• tailings
	• buildings, including:
	  • ablutions
	  • amenities
	  • change room
	  • chemical stores
	  • control rooms
	  • dangerous goods store
	  • explosives magazines
	  • First Aid
	  • fuel storage

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	• laboratory • mines rescue station • offices • oil store • power station • supply stores • tyre stores • weighbridge • workshops
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Emergency response systems may include:	• designated escape ways • evacuation procedures • alarm systems • guidance systems • emergency communication systems • self-aided escape apparatus • rescue capability
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation policy and objectives
Reporting and recording systems include site requirements and may include:	• phones • radios • computer systems • verbal and written
Standard operating procedures (**SOP**) are also known as:	• safe working procedures, safe operating procedures and standard working procedures
Safety systems may include:	• legislation (legal requirements) • location • site layout • purpose • environmental control (spontaneous combustion, gas, noise, water, heat, dust) • protection systems (guarding, fire protection and suppression, electricity, lightning arresters,

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	ventilation in explosives magazines and earthing)
Specifications may include:	• performance requirements • costs • dimensions • capacity • OHS requirements • training requirements • key selection criteria

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI510A Implement, monitor, rectify and report on interfaces between electrical and mechanical componentry

Modification History

Not applicable.

Unit Descriptor

This unit covers implement, monitor, rectify and report on interfaces between electrical and mechanical componentry in the coal mining industry. It includes: determining the requirements; planning rectification work; and rectifying the electrical and mechanical interface componentry.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine requirements of electrical and mechanical interface	1.1. Access, interpret and apply ***compliance documentation*** relevant to implement, monitor, rectify and report on the interfaces between electrical and mechanical ***componentry*** 1.2. Examine components defect reports 1.3. Inspect components according to site, legislative and manufacturer procedures 1.4. Prepare reports detailing the equipment modifications requirements
2. Plan rectification work on electrical and mechanical interface componentry	2.1. Use available information from maintenance and test results to ensure accurate problem identification 2.2. Identify componentry faults and causes 2.3. Report fault rectification requirements 2.4. Obtain specialist advice / assistance where required 2.5. Isolate/tag componentry for rectification work
3. Rectify electrical and mechanical interface componentry	3.1. Dismantle componentry parts in accordance with manufacturer requirements and safe working procedures 3.2. Assess componentry parts for serviceability 3.3. Undertake modifications according to manufacturer specifications/specialist advice 3.4. Replace componentry parts according to manufacturer specifications/safe working procedures 3.5. Test componentry for safe working with proscribed specifications 3.6. Record repaired / modified componentry details 3.7. Notify appropriate personnel of repairs / modifications

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement, monitor, rectify and report on interfaces between electrical and mechanical componentry:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - site / legislative requirements
  - records and reports
  - briefings and handover details
- apply the principles of mine design
- assess the risks and consequences attached to mechanical systems
- apply work planning and coordinating procedures
- apply procedures for managing confined spaces
- apply training needs analysis
- interpret and apply manufacturers' instructions
- apply maintenance survey procedures
- liaise with other parties
- coordinate others
- use information management
- apply problem solving techniques
- apply analysis techniques
- use measuring equipment
- apply report writing techniques
- facilitate meetings
- apply operational and safety requirements
- read, interpret and apply technical instrument information
- apply diagnostic techniques
- apply environmental constraints in rectification operations
- apply equipment records maintenance requirements
- apply procedures for the disposal of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement, monitor, rectify and report on interfaces between electrical and mechanical componentry:

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- legislative, statutory, Australian standards and site specific requirements for maintenance of mechanical systems, including communications, emergency procedures, risk management, recording and reporting, mines rescue, OHS, manufacturer instructions, standard work procedures, training, fire fighting, handling and storage of dangerous goods, local government and power authority requirements
- mine operating systems and procedures, including transport systems, conveyor systems, systems of mining, ventilation systems, gas management systems and mine water management systems
- stores systems
- underground roadway and drilling
- protection systems
- reticulation systems
- specification for mechanical systems
- audit procedures
- mine design principles and procedures relating to mechanical systems
- company organisation
- computer based systems
- training programs
- safety design features for maintenance of mechanical systems
- maintenance surveys
- work role definitions
- reporting methods and alternatives
- community expectations
- consultative strategies
- alternative documentation systems for procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to implement, monitor, rectify and report on the interfaces between electrical and mechanical componentry • implementation of procedures and techniques to safely, effectively and efficiently implement, monitor, rectify and report on the interfaces between electrical and mechanical componentry • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to implement, monitor, rectify and report on the interfaces between electrical and mechanical componentry • consistent successful implementing, monitoring, rectifying and reporting on the interfaces between electrical and mechanical componentry
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to implement, monitor, rectify and report on the interfaces between electrical and mechanical componentry • provision of clear and timely required support and advice on the implementing, monitoring, rectifying and reporting on the interfaces between electrical and mechanical componentry
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Electrical componentry may include componentry in:	• power systems • electrical protection systems • mine cabling • remote control systems • communication systems
Mechanical componentry may include:	• hydraulic components • air system components • rope system components • transmission systems components

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Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI601A Establish and maintain the site infrastructure and fixed plant systems

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining the site infrastructure and fixed plant systems in the mining and extractive industries. It includes establishing and confirming the site's operational strategy; developing and testing the detailed site infrastructure and plant proposals; and obtaining and recording site infrastructure and plant system approvals.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish or confirm the site's operational strategy	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining the site infrastructure and fixed plant systems 1.2. Complete and/or confirm feasibility analysis 1.3. Obtain and/or confirm ***statutory***/***legal approvals*** 1.4. Carry out ***title searches*** 1.5. Prepare detailed plans, budgets, financial models, in accordance with the feasibility analysis for fixed plant and ***infrastructure*** requirements of the site 1.6. Prepare requirements for ***fixed plant*** and infrastructure within the general site ***development*** proposal and submit to the organisation, board or executive for endorsement 1.7. Collect, analyse and organise strategic resource ***planning*** information in preparation for decision making 1.8. Estimate impacts on the organisation business plans, and the financial benefit from fixed plant or infrastructure changes 1.9. Assess hazards associated with the planned option and develop plans to manage identify risks
2. Develop and test the detailed site infrastructure proposal	2.1. Access, identify and interpret the legislative, statutory and likely site requirements related to infrastructure 2.2. Identify the requirements for and purpose of infrastructure items in accordance with site design and system of mining 2.3. Develop ***specifications*** for infrastructure items from a comprehensive analysis of site requirements 2.4. Identify infrastructure options from an analysis of all relevant technical, operational and financial information 2.5. Select preferred infrastructure options on the basis of projected performance against

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	specification requirements 2.6. Assess by visit, and confirm potential infrastructure sites/routes and capacities, entered on the site plan
3. Develop and test the detailed site plant proposal	3.1. Access, identify and interpret the ***legislative***, ***statutory and site requirements*** related to required fixed plant 3.2. Identify the requirements for and purpose of fixed plant in accordance with site design and system of mining 3.3. Identify supporting ***mobile plant*** requirements 3.4. Develop specifications for plant from a comprehensive analysis of site requirements 3.5. Identify plant options from an analysis of all relevant technical, operational and financial information 3.6. Select preferred plant options on the basis of projected performance against specification requirements 3.7. Assess by visit and confirm potential sites for fixed plant, entered on the site plan
4. Obtain and record site infrastructure and plant system approvals	4.1. Prepare detailed proposals for the site infrastructure components, layout, specifications and costs 4.2. Prepare detailed proposals for the site plant items, specifications, the locations of fixed plant and costs 4.3. Prepare detailed proposals for supporting plant items and costs 4.4. Obtain formal approvals for the proposed site infrastructure and plant systems in accordance with enterprise policies 4.5. Vary the site infrastructure and plant systems records to reflect any approval conditions and finalised in preparation for implementation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain site infrastructure and fixed plant systems:

- apply procedures for the development and review of business plans
- apply resource plan development requirements and procedures
- apply project budget preparation requirements and procedures
- apply title search procedures
- apply statutory and legal approval application procedures
- apply project management strategies
- apply techniques to implement change
- access and use appropriate technologies
- apply procedures for the preparation and presentation of management reports
- apply negotiation techniques with internal/external customers, community and statutory/legal authorities
- apply conflict resolution techniques
- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- apply the principles of site design
- apply hazard identification and risk management processes
- apply work planning and coordination processes
- apply training needs analysis
- interpret and apply manufacturer's instructions
- apply maintenance survey procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain site infrastructure and fixed plant systems:

- business planning
- computer applications
- financial models
- site design

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- mining operations, plant and equipment
- negotiation techniques
- organisational change and development
- organisational objectives
- planning and strategic management
- project management
- resource quantification
- risk management
- statutory/legal control
- surveying
- titles management

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining site infrastructure and fixed plant systems • implementation of procedures and techniques for the safe, effective and efficient completion of the establishing and maintenance of site infrastructure and fixed plant systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to undertake and complete the establishing and maintenance of site infrastructure and fixed plant systems • timely completion of establishing and maintenance of site infrastructure and fixed plant systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of option that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the establishing and maintenance of site infrastructure and fixed plant systems

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	• timely gaining of approval of site infrastructure and fixed plant systems • provision of clear, timely required support and advice on the implementation of site infrastructure and fixed plant systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Statutory/legal approvals may include:	• boundaries, leases and tenements • licences • approvals by government regulatory authorities or councils • dangerous goods • environmental - noise/air/water • explosives • harbours and marine • site safety and health requirements • port authority • rehabilitation • royalties
Title searches may include:	• issues of land ownership • council • lease • by-laws • contamination • wildlife corridors
Infrastructure may include:	• road and railways • dams • fencing • stockpile/product bays • salvage areas • reticulation systems • car parks

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	• communications facilities
	• power supply
	• fuel facilities
	• water supply facilities
	• water management facilities
	• product storage facilities
	• waste management facilities
	• tailings discharge facilities
	• pipelines
	• buildings including:
	  • ablutions
	  • amenities
	  • change room
	  • chemical stores
	  • control rooms
	  • dangerous goods store
	  • explosives magazines
	  • First Aid
	  • fuel storage
	  • laboratory
	  • sites rescue station
	  • offices
	  • oil store
	  • power station
	  • supply stores
	  • tyre stores
	  • weighbridge
	  • workshops

Fixed plant may include:	• crushers • screens • conveyors • feeders • washery • materials handling systems • waste handling system
Development and planning may include:	• interpreting and communicating information • business/performance plans • location • tender specifications • communication liaison/public relations

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	• resources • statutory/legal/organisational requirements and control • resource parameters • best practice • technical standards established by industry and/or enterprise • legal issues/processes • planning approvals • surveying
Specifications may include:	• environment • health and safety • hours per week of operation • production rate • products • recyclable materials • stack emissions • transportation systems • waste and stockpiles
Legislative, **statutory and site requirements** may be contained in:	• legislation and regulations • relevant Australian standards • management plans • safety and health policy • code of practice • manufacturer's instruction • standard/safe working or job procedures (or equivalent) • industry guidelines
Mobile plant may include:	• backhoe • barge • bucket wheel excavator • cherry picker • compressor • concrete agitator • crane • dozer • dragline • dredge • drill • dump truck • excavator • explosives vehicle

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	• face shovel • forklift • front end loader • generator • grader • integrated carrier • roller • scraper • service/maintenance vehicle • skid steer loader • truck • water truck

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI602A Establish and maintain mine mechanical plant, services and infrastructure systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishing and maintaining of mine mechanical plant, services and infrastructure systems in the coal mining industry. It includes: designing and/or selection of specifications for the system; establishing the installation, testing and commissioning systems and procedures; establishing the operational parameters and maintenance requirements for plant, equipment or services; installing, commissioning and testing the mine mechanical plant, services and infrastructure systems; and implementing the mine mechanical plant, services and infrastructure.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Design/selection specifications for the system	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining ***mine mechanical plant***, ***services and infrastructure systems*** 1.2. Establish design/selection specifications for the mine mechanical plant, services and infrastructure systems from a comprehensive analysis of operating requirements 1.3. Identify design/selection options from an analysis of all relevant technical, operational and financial information, interface with existing plant where appropriate, including ***hazard*** identification and ***risk*** analysis 1.4. Select the preferred ***plant***, ***equipment*** and ***services*** options on the basis of performance against specification requirements
2. Establish installation, testing and commissioning systems and procedures	2.1. Assess the hazards, analyse and evaluate risks associated with the installation of plant, equipment and services in accordance with site procedures 2.2. Establish procedures for installing, testing and commissioning plant, equipment and services 2.3. Plan and prepare for integration of new and existing systems and procedures to achieve optimum performance 2.4. Identify resources required for the implementation of mine mechanical plant, services and infrastructure systems 2.5. Determine ***training*** needs
3. Establish operational parameters and maintenance requirements for plant, equipment or services	3.1. Incorporate the operational parameters and operational /maintenance risk assessment for plant, equipment and services into ***site documentation*** in accordance with site and legislative requirements 3.2. Establish ***maintenance*** plan for plant, equipment and services from site and legislative requirements and incorporate

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	into existing maintenance system 3.3. Incorporate recording and reporting requirements of new plant, equipment and services information into existing site documentation
4. Install, commission and test mine mechanical plant, services and infrastructure systems	4.1. Conduct a risk assessment for the installation, commissioning and testing of mechanical plant, services and infrastructure systems 4.2. Install mechanical plant, services and infrastructure systems 4.3. Commission and test equipment compliance in accordance with design specifications and site requirements 4.4. Respond to non-compliance or other discrepancies/deficiencies revealed by commissioning and testing
5. Implement mine mechanical plant, services and infrastructure	5.1. Identify and interpret the legislative and site requirements related to the implementation of mine mechanical plant, services and infrastructure systems 5.2. Forecast, obtain and allocate/schedule resources required for the implementation of mine mechanical plant, services and infrastructure systems 5.3. Identify, clarify and communicate to all personnel roles and responsibilities, related to the implementation of mine mechanical plant, services and infrastructure systems 5.4. Implement mine mechanical plant, services and infrastructure systems training program 5.5. Consult with relevant stakeholders and implement changes to mine mechanical plant, services and infrastructure systems and implementation procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain mine mechanical plant, services and infrastructure systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - site / legislative requirements
  - records and reports
  - briefings and handover details
- apply the principles of mine design
- apply hazard identification and risk management processes
- apply work planning and coordination procedures
- apply training needs analysis
- interpret and apply manufacturers' instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain mine mechanical plant, services and infrastructure systems:

- legislative and site-specific requirements for mine plant, services and infrastructure
- emergency response and disaster planning processes and techniques
- audit review process and techniques
- mine operating procedures for mine plant, services and infrastructure
- mine design relating to mine plant, services and infrastructure
- energy sources, including protection and reticulation systems for electrical, hydraulic, compressed air, diesel
- safety design features of mine services and infrastructure
- a basic knowledge of computer based systems related to the monitoring and operation of mine plant, services and infrastructure
- training programs
- fire fighting systems
- safety design features for maintenance of mine plant, services and infrastructure
- stores systems
- specifications for fixed plant and infrastructure

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintain of mine mechanical plant, services and infrastructure systems • implementation of procedures and techniques for the safe, effective and efficient completion of the establishing and maintenance of mine mechanical plant, services and infrastructure systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to establish and maintain mine mechanical plant, services and infrastructure systems • consistent and timely establishing and maintenance of mine mechanical plant, services and infrastructure systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain mine mechanical plant, services

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	and infrastructure systems • consistent and timely gaining of approval of mine mechanical plant, services and infrastructure systems • provision of clear, timely required support and advice on the implementation of mine mechanical plant, services and infrastructure systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Plant may include:	• Wheeled transport may include:
	  • rubber tyred man transport
	  • multipurpose vehicles
	  • load haul dump
	  • forklifts
	  • front end loader
	  • skid steer loader and grader
	• Rail transport may include:
	  • locomotives (electric / diesel)
	  • rail mounted personnel carriers
	  • rolling stock
	  • drift haulage systems
	• Track vehicles may be fixed or mobile and may include:
	  • shearer carriers
	  • personnel carriers
	  • chock recovery vehicles (mules)
	  • mine dozer
	• Shaft winding systems, e.g. product, personnel and material and may include:
	  • head gear
	  • cages and skips
	  • winding apparatus and communications
	  • control system

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	• discharge and loading facilities • counter balances • Conveyor system may include: • conveyor belts • drive heads • tail ends transfer points • surge bins • inter seam bins • fabricated bins • Product slurry pumping may include: • batching stations • dewatering systems • watering reticulation pumping stations • Production equipment may include: • shearer • armoured face conveyor • pantech • chocks • stage loader • face drill rigs • shuttle cars • ram cars • ratio feeders • breaker line support • roof bolters (mobile and hand held) • rib bolters • road header • continuous miners • in-seam miners • high wall miners • loaders • shotfiring • hydraulic mining
Mine services may include:	• water • wastewater • compressed air • fire fighting • gas drainage • fuel • electrical reticulation

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	• waste disposal • condition monitoring • phones • radios
Infrastructure refers to fixed plant and equipment which may include:	• fabrication and construction areas • servicing areas • re-fuelling points • workshops and equipment • equipment storage areas • bathrooms • water treatment plant • buildings and structures e.g. bins, silos, crushers, feeders • storage facilities • coal preparation plant • cranes • sewerage treatment plant • emergency facilities (equipment) • testing equipment • stockpile and coal load out. • conveyor systems • pipelines • compressors • haulage winches • process treatment plant • air conditioning • pumps and stations • ventilation fans • winders • battery charging stations • generators • gas plant
Site documentation and training policy may include:	• legislative requirements • management plans and procedures
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Maintenance is to restore or keep	• inspecting and testing plant and equipment

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at the level that it was originally designed to, by:	• monitoring plant and equipment • servicing equipment • repairing equipment • overhauling equipment

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI603A Establish and maintain mine transport systems and production equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining mine transport systems and production equipment in underground coal mines. It includes: developing production and transport systems; selecting equipment for production and transport systems; establishing installation and commissioning systems and procedures and systems for the operation and maintenance of production and transport systems and equipment; planning and preparing for the implementation of safe production and transport systems and equipment; and establishing systems for audit and review of production and transport systems and equipment.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop production and transport systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining mine ***transport systems*** and ***production equipment*** 1.2. Identify the requirements for and purpose of production and transport systems in accordance with the system of mining 1.3. Identify systems options from an analysis of all relevant technical, operational and financial information 1.4. Establish ***specification*** for the production and transport system from a comprehensive analysis of operating requirements 1.5. Select the preferred systems options on the basis of performance against specification requirements
2. Select equipment for production and transport systems	2.1. Identify the requirements for and purpose of production and transport equipment against systems requirements 2.2. Conduct a detailed scoping of the operational requirement and develop key selection criteria, including ***hazard*** identification and ***risk*** analysis 2.3. Establish specification for the required production and/or transport equipment 2.4. Select the preferred equipment solutions on the basis of performance against specification requirements
3. Establish installation and commissioning systems and procedures	3.1. Establish systems to identify hazards and analyse and evaluate risks associated with the installation of production and transport systems and equipment 3.2. Plan and prepare for integration of new and existing mine production and transport systems and processes 3.3. Establish procedures for installing and commissioning production and transport systems and equipment 3.4. Establish systems and procedures, to satisfy identified production and transport systems training requirements

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4. Establish systems for the operation and maintenance of production and transport systems and equipment	4.1. Establish ***operational procedures*** for production and transport systems and equipment and incorporate into site documentation 4.2. Establish ***maintenance*** procedures for production and transport systems and equipment from site and legislative requirements and incorporate into site documentation 4.3. Establish procedures for reviewing and modifying work processes 4.4. Establish the system of recording and reporting production and transport equipment information
5. Plan and prepare for the implementation of safe production and transport systems and equipment	5.1. Identify and interpret the legislative and site requirements related to the implementation of safe production and transport systems and equipment 5.2. Identify, clarify and communicate to all personnel roles and responsibilities, related to the implementation of safe production and transport systems and equipment 5.3. Identify, forecast, obtain and allocate/schedule resources required for the implementation of safe production and transport systems and equipment 5.4. Implement production and transport systems and equipment training program 5.5. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to safe production and transport systems and equipment implementation procedures
6. Establish systems for audit and review of production and transport systems and equipment	6.1. Establish procedures to audit and review equipment compliance in accordance with legislative and site requirements 6.2. Identify and assess future production and transport systems and equipment requirements and incorporate in to planning processes 6.3. Establish procedures to audit and review the currency and compliance of operation and maintenance relating to production and transport systems and equipment 6.4. Establish procedures for incorporating

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	feedback into the ***audit***/review system 6.5. Establish procedures to confirm the currency, relevance and compliance with the training program against identified requirements 6.6. Establish procedures for response to instances on non-compliance or other discrepancies / deficiencies revealed by audit 6.7. Establish procedures to audit emergency response and evacuation systems for compliance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain mine transport systems and production equipment:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - briefings and handover details
- apply the principles of mine design
- apply hazard identification and risk management processes
- apply work planning and coordination procedures
- apply training needs analysis
- interpret and apply manufacturers' instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain mine transport systems and production equipment:

- legislative requirements and instructions, including transport rules, maintenance schemes, standard operating procedures, training, testing on diesel vehicles, battery charging, underground fuel depots, conveyor belts
- mine operation procedures
- geological structures
- mine plans
- mine design relating to production and transport systems and equipment
- production and transport systems and equipment management requirements
- site environmental monitoring requirements
- risk management procedures
- production and transport systems and equipment legislative inspection requirements
- mine reporting procedures
- emergency response and evacuation planning processes and techniques
- audit review processes and techniques
- production and transport equipment and systems; the types, uses, characteristics and limitations appropriate for safe operation at the mine site
- energy sources including electrical, hydraulic, pneumatic, diesel

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- safety design features of production and transport systems
- standard operating procedures relating to production and transport equipment
- stores system
- specification design criteria, including noise, dust, lighting, ergonomics, remote control, physical clearance, confined space, visibility, seating vibration and machine equipment and personal protection
- training programs
- a basic knowledge of computer based systems relating to production and transport systems
- fire fighting systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing and maintenance of mine transport systems and production equipment • implementation of procedures and techniques for the safe, effective and efficient establishing and maintenance of mine transport systems and production equipment • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to undertake and complete the establishing and maintenance of mine transport systems and production equipment • consistent and timely completion of the establishing and maintenance of mine transport systems and production equipment
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain mine transport systems and production equipment

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	• consistent and timely gaining of approval of mine transport systems and production equipment • provision of clear, timely required support and advice on the implementation of mine transport systems and production equipment
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Transport systems include capacities for personnel, equipment / materials and product and may be:	• wheeled, which may include:
	  • rubber tyred man transport
	  • multipurpose vehicles
	  • load haul dump
	  • forklifts
	  • front end loader
	  • skid steer loader and grader
	• railed, which may include:
	  • locomotives (electric / diesel)
	  • rail mounted personnel carriers
	  • rolling stock
	  • drift haulage systems
	• tracked, which may be fixed or mobile and may include:
	  • shearer carriers
	  • personnel carriers
	  • chock recovery vehicles (mules)
	  • mine dozer
	• skidded
	• conveyor systems, which may include:
	  • conveyor belts
	  • drive heads
	  • tail ends transfer points
	  • surge bins

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	• inter seam bins • fabricated bins • product slurry pumping systems, which may include: • batching stations • dewatering systems • watering reticulation pumping stations • shaft/drift winding systems, which may include product, personnel and material and may comprise: • head gear • cages and skips • winding apparatus and communications • control system • discharge and loading facilities • counter balances
Production equipment may include:	• shearer • armoured face conveyor • pantech • chocks • stage loader • face drill rigs • shuttle cars • ram cars • ratio feeders • breaker line support • roof bolters (mobile and hand held) • rib bolters • road header • continuous miners • in-seam miners • high wall miners • auger miners • loaders • shotfiring • hydraulic mining
Specifications may include, but are not limited to:	• performance requirement • costs • dimensions • capacity • OHS requirements

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	• training requirements • key selection criteria
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Standard operating procedures (SOP) are:	• also known as safe working procedures, safe operating procedures and standard working procedures
Maintenance may be divided into:	• predictive • preventive • breakdown
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI604A Establish and maintain mine services and infrastructure systems

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining mine services and infrastructure systems in underground coal mines. It includes: designing mine services and infrastructure systems; selecting plant, equipment or services; establishing installation and commissioning systems and procedures; establishing management systems for the operation and maintenance of plant, equipment or services; planning and preparing for the implementation of mine services and infrastructure; and establishing management systems to audit and review mine services and infrastructure systems.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Design mine services and infrastructure systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining ***mine services and infrastructure*** systems 1.2. Identify the requirements for and purpose of mine services and infrastructure systems in accordance with legislative requirements and the system of mining 1.3. Establish specifications for the mine services and infrastructure systems from a comprehensive analysis of operating requirements 1.4. Identify options from an analysis of all relevant technical, ***operational*** and financial information 1.5. Select the preferred systems options on the basis of performance against ***specification*** requirements 1.6. Assess potential locations for mine services and infrastructure by site inspection, locate on mine plan and confirm location
2. Select plant, equipment or services	2.1. Identify the requirements for, and purpose of plant, equipment and services against systems requirements 2.2. Conduct a detailed scoping of the operational requirement and develop key selection criteria, including ***hazard*** identification and ***risk*** analysis 2.3. Establish specifications for the required plant, equipment and services 2.4. Select the preferred plant, equipment and services options on the basis of performance against specification requirements
3. Establish installation and commissioning systems and procedures	3.1. Establish a system to identify hazards and analyse and evaluate risks associated with the installation of plant, equipment and services 3.2. Plan and prepare for integration of new and existing ***systems and procedures*** to achieve optimum performance

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	3.3. Establish procedures for installing and commissioning plant, equipment and services 3.4. Establish systems and procedures to satisfy identified training requirements
4. Establish management systems for the operation and maintenance of plant, equipment or services	4.1. Establish operational procedures for plant, equipment and services from site and legislative requirements and incorporate into ***site documentation*** 4.2. Establish ***maintenance*** procedures for plant, equipment and services from site and legislative requirements and incorporate into site documentation 4.3. Establish procedures for reviewing and modifying work processes 4.4. Establish the maintenance of emergency response and evacuation plant, equipment and services in accordance with site requirements 4.5. Establish the system for ***recording and reporting*** of plant, equipment and services information
5. Plan and prepare for the implementation of mine services and infrastructure	5.1. Identify and interpret the legislative and ***site requirements*** related to the implementation of mine services and infrastructure systems 5.2. Identify, clarify and communicate to all personnel roles and responsibilities, related to the implementation of mine services and infrastructure systems 5.3. Identify, forecast, obtain and allocate/schedule resources required for the implementation of mine services and infrastructure systems 5.4. Implement mine services and infrastructure systems training program 5.5. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to mine services and infrastructure systems and implementation procedures
6. Establish management systems to audit and review mine services and infrastructure	6.1. Establish procedures to audit and review equipment compliance in accordance with legislative and site requirements

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systems	6.2. Identify and assess future plant, equipment and services requirements into the planning processes 6.3. Establish procedures to audit and review the currency and compliance of operation and maintenance systems relating to plant, equipment and services 6.4. Establish procedures to ***audit*** the training programs for currency and relevance 6.5. Establish procedures for incorporating feedback into the audit/review system 6.6. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain mine services and infrastructure systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - site / legislative requirements
  - records and reports
  - briefings and handover details
- apply the principles of mine design
- apply hazard identification and risk management processes
- apply work planning and coordination procedures
- apply training needs analysis
- interpret and apply manufacturers' instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain mine services and infrastructure systems:

- legislative and site-specific requirements for mine services and infrastructure
- emergency response and disaster planning processes and techniques
- audit review process and techniques
- mine operating procedures for mine services and infrastructure
- mine design relating to mine services and infrastructure
- energy sources including protection and reticulation systems for electrical, hydraulic, compressed air, diesel
- safety design features of mine services and infrastructure
- a basic knowledge of computer based systems related to the monitoring and operation of mine services and infrastructure
- training programs
- fire fighting systems
- safety design features for maintenance of mine services and infrastructure
- stores systems
- specifications for fixed plant and infrastructure

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining mine services and infrastructure systems • implementation of procedures and techniques for the safe, effective and efficient establishing and maintaining of mine services and infrastructure systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to establish and maintain mine services and infrastructure systems • consistent and timely completion of the establishing and maintenance of mine services and infrastructure systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain mine services and infrastructure systems
	  • consistent and timely gaining of approval of

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	mine services and infrastructure systems • provision of clear, timely required support and advice on the implementation of mine services and infrastructure systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mine services may include, but not be limited to:	• water • wastewater • compressed air • fire fighting • gas drainage • fuel • electrical reticulation • waste disposal • condition monitoring • communication • stone dust handling systems • mine refrigeration systems • sewerage handling systems
Infrastructure refers to fixed plant and equipment which may include:	• fabrication and construction areas • servicing areas • re-fuelling points • workshops • dams • explosives magazines • training facility • bathrooms • HV switch rooms • lamp cabin • laboratory • storehouses

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	• equipment storage areas • on site residential housing • site access (road, rail, air) • battery rooms • water treatment plant • sewerage treatment plant • offices • emergency facilities (First Aid, fire) • coal preparation plant • stockpile and coal load out • lathes • presses • gantry cranes • drills • grinders • service bays • testing rooms • process treatment plant • conveyor systems • pumps and stations • pipelines • ventilation fans • compressors • winders • haulage winches • battery chargers • air conditioning • generators • electrical switching/control/distribution equipment • gas plant
Specifications may include, but are not limited to:	• performance requirements • costs • dimensions • capacity • OHS requirements • training requirements • key selection criteria
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is

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	measured in terms of consequences and likelihood
Systems and procedures may include:	• design • development • establishment • installation • operations • protection • maintenance • monitoring • recording • reporting process
Standard operating **procedures** (SOP) are:	• also known as safe working procedures, safe operating procedures and standard working procedures
Site documentation and training policy may include, but not be limited to:	• legislative requirements • management plans and procedures
Maintenance may be divided into:	• predictive • preventative • breakdown
Recording and reporting systems include site requirements and consist of:	• phones • radios • computer systems • verbal and written
Site requirements may contain:	• legislation, including, but not limited to • mine plans, electric rules, gas drainage, compressed air, electrical / mechanical equipment, inspection requirement, environmental management, explosion barriers, communication, emergency procedures, risk management, recording and reporting, mines rescue, OHS, manufacturer instructions, standard work procedures, training and fire fighting, handling and storage of dangerous goods, local government and power authority requirements • relevant Australian standards • safety management plans • OHS policy • code of practice • industry guidelines

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	• approved standards • manufacturer instructions • standard operating procedures (or equivalent) • industry guidelines
Safety systems may include, but are not limited to:	• legislation (legal requirements) • location of components in protection system • specific hazard management (e.g. spontaneous combustion, gas, noise, water, heat, dust) • protection systems (guarding, fire protection and suppression, electricity, lighting arresters, ventilation in explosives magazines and earthing)
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI605A Establish and maintain an underground mine mechanical plant management system

Modification History

Not applicable.

Unit Descriptor

This unit covers C mechanical plant management systems in underground coal mines. It includes: identifying, analysing and evaluating hazards and risks associated with the use of mechanical equipment in an underground coal mine; identifying, analysing and evaluating hazards and risk control options and measures; establishing the mine mechanical plant management system; implementing the mechanical plant management system; and auditing and reviewing the system.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify, analyse and evaluate hazards and risks associated with the use of mechanical equipment in an underground coal mine	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining underground mine ***mechanical plant management systems*** 1.2. Identify, evaluate and clarify mine conditions which contribute to explosive atmospheres 1.3. Identify, evaluate and clarify conditions which contribute to ***flammable environments*** 1.4. Identify, evaluate and clarify ***hazards*** caused by disruption to the mine ventilation system 1.5. Identify, analyse and evaluate hazards and ***risks*** relating to mechanical plant
2. Identify, analyse and evaluate hazards and risk control options and measures	2.1. Identify, analyse and evaluate explosion protection control techniques for mechanical equipment 2.2. Identify, analyse and evaluate fire protection and prevention methods and systems on mechanical equipment 2.3. Identify, analyse and evaluate methods and systems to control engine pollutants from mechanical equipment 2.4. Identify, analyse and evaluate methods and systems to control hazardous substances initiated from or used by mechanical equipment 2.5. Develop systems to maintain the integrity of safety critical functions of mechanical equipment 2.6. Develop systems to control hazards for ***energy*** dissipation and isolation systems on mechanical equipment 2.7. Develop systems to control hazards in lifting and towing systems for mechanical equipment 2.8. Develop systems to protect people in their ***interrelationship with mechanical equipment*** in the underground environment 2.9. Develop systems to prevent failure of

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	winding and personnel ***transport equipment*** 2.10. Evaluate the uses of mine monitoring and information systems to control hazards and risks on mechanical equipment
3. Establish the mine mechanical plant management system	3.1. Access, interpret and clarify the legislative and site requirements related to mechanical plant and equipment 3.2. Establish mechanical plant objectives, systems, descriptions and responsibilities and incorporate into the mechanical plant management system 3.3. Consult with relevant stakeholders in the development of the mechanical plant management system 3.4. Design mechanical plant management systems to satisfy the ***operational systems and conditions*** of the mine 3.5. Incorporate maintenance and inspections systems to ensure the equipment is safe to operate 3.6. Incorporate systems to monitor and test the performance of safety critical functions on mechanical plant and equipment 3.7. Incorporate systems to control noise, dust, other emissions and other hazardous substances 3.8. Incorporate systems to develop ***safe work procedures*** 3.9. Incorporate systems for the management of mechanical contractors 3.10. Develop and establish mechanical ***engineering standards*** 3.11. Develop and establish mechanical equipment information recording and reporting procedures, including defect reporting and rectification 3.12. Establish a program, including systems and procedures, to satisfy mechanical equipment ***training*** requirements 3.13. Incorporate audit and review requirements and update procedures into the mine mechanical plant management

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	system.
4. Implement the mechanical plant management system	4.1. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the mechanical plant management system 4.2. Communicate to all personnel, including contractors, roles and responsibilities, as specified in the mechanical plant management system 4.3. Implement the mechanical plant training program 4.4. Consult with relevant stakeholders and implement changes to mechanical plant management system
5. Audit and review the mechanical plant management system	5.1. ***Audit*** mine mechanical engineering standards for compliance with statutory and mine site requirements 5.2. Audit mine mechanical equipment monitoring systems operations for compliance with statutory and mine site requirements 5.3. Audit the maintenance program and procedures for compliance with the Mechanical Plant Management System and statutory requirements 5.4. Audit recording and reporting systems for compliance with the Mechanical Plant Management System 5.5. Audit mechanical plant management training program for currency, relevance and compliance with the requirements of the Mechanical Plant Management System 5.6. Establish procedures for non-compliances revealed by audit and modify the management plan where appropriate 5.7. Review the Mechanical Plant Management System

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain an underground mine mechanical plant management system:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - site / legislative requirements
  - records and reports
  - briefings and handover details
- apply the principles of mine design
- apply hazard identification and risk management processes
- apply work planning and coordination procedures
- apply training needs analysis
- interpret and apply manufacturer instructions
- apply effective communication techniques
- access, evaluate and apply data from monitoring systems and equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain an underground mine mechanical plant management system:

- legislative and statutory requirements for mechanical plant and equipment
- the emergency response and disaster planning processes and techniques
- audit review processes and techniques
- mechanical engineering standards
- safety critical function of mechanical equipment
- mine operating procedures for mechanical plant and equipment
- mine design relating to mechanical plant and equipment
- options to prevent failure of winding and personnel transport equipment
- options to control hazards and risks relating to mine mechanical plant and equipment, including explosion protection, fire protection and prevention, lifting and towing systems, hazardous substances and the interrelationship between people and mechanical equipment
- energy sources, including protection and reticulation systems for electrical, hydraulic, compressed air, diesel

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- mine fires; the types, sources of ignition and possible impacts on plant and equipment
- a basic knowledge of computer based systems relating to the monitoring, and operation of mine mechanical plant and equipment
- fire fighting systems
- specification for mine plant and equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing and maintenance of an underground mine mechanical plant management system • implementation of procedures and techniques for the safe, effective and efficient completion of the establishing and maintenance of an underground mine mechanical plant management system • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to establish and maintain an underground mine mechanical plant management system • consistent and timely establishing and maintenance of an underground mine mechanical plant management system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain an underground mine mechanical

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	plant management system • consistent and timely gaining of approval of an underground mine mechanical plant management system • provision of clear, timely required support and advice on the implementation of an underground mine mechanical plant management system
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mechanical plant management system establishes procedures for maintaining safe equipment including:	• hazard identification and quantification • risk management • consultation • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review
Flammable environment may include but is not limited to:	• coal storage bins • reclaim tunnels • confined spaces • gases • dust • restricted work area • flammable environments, i.e. those related to heat sources, fuel sources and ignition sources
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Hazards and risks to be identified, analysed and clarified in the MPMS include:	• explosion initiated from mechanical equipment • fire initiated and/or supported by mechanical equipment

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	• hazardous substances used for mechanical equipment • toxic substances generated by mechanical equipment • the release of uncontrolled kinetic energy (unplanned movements) on mechanical equipment • the interaction and/or failure of transport and production equipment • the use and storage of high pressure fluids • moving and rotating parts on mechanical equipment • fluid injection incidents • dangerous goods e.g. LPG, flammable liquids • strata failure
Interrelationship with mechanical equipment in the underground environment may include:	• access systems • guarding • remote and/or automatic control • restricted working areas • safe standings/operating zones • ergonomics and vibrations • vision • manual handling • working at heights • emergency egress systems
Hazards associated with **transport equipment** and other plant may include:	• tyre and rim failure • interaction between vehicles • restricted vision and clearance • power reticulation
Operational systems and conditions may include but are not limited to:	• methods of mining (e.g. longwall, place change, bord and pillar) • weather • grades • water • drilling and explosives • road and rail design • dredging and pumping • electrical reticulation • productivity • environmental considerations • coal preparation and handling • methane drainage

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Safe work procedure will include, but is not limited to:	• cutting and welding in underground coal mines • energy isolation and dissipation • confined spaces
Engineering standards may include but are not limited to:	• mechanical plant maintenance procedures • system for the modification and rectification of mechanical equipment • systems for erection of plant
Training applies to:	• mine workers • tradespeople • permanent employees • contractors • mine officials • other special requirements
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI606A Establish and maintain mine closure management systems

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining mine closure management systems in the metalliferous mining industry. It includes: identifying and evaluate the criteria to establish mine closure management systems, the hazards and risks for mine closure, geological and geotechnical information for mine closure, mining engineering principles and practices; establishing the mine closure system; and auditing and reviewing the effectiveness of the mine closure system.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and evaluate the criteria to establish mine closure management systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining mine closure management systems 1.2. Identify, collect, access and interpret mine survey data, in accordance with statutory and site requirements 1.3. Access the mine environmental management system, and identify and interpret information related to mine closure 1.4. Identify, evaluate and record ***historical information*** relating to the mine site 1.5. Identify, assess and interpret all possible mining ***structure*** failure modes relevant to the mine site 1.6. Identify and record necessary ***resources*** required for mine closure
2. Identify and evaluate hazards and risks for mine closure	2.1. Identify existing and potential ***hazards*** and confirm identification in accordance with environmental legislation, code of practice and trends identified from the environmental ***management*** system 2.2. Analyse the ***risks*** associated with mine closure 2.3. Identify and assess the limitations and controls applying to mine closure
3. Identify and evaluate geological and geotechnical information for mine closure	3.1. Identify and evaluate ***geological*** structures 3.2. Identify and evaluate ***hydrogeological*** features 3.3. Identify and evaluate strata characteristics 3.4. Identify and evaluate rock types and ore body features and physical properties 3.5. Identify and evaluate ***stress*** regimes
4. Identify and evaluate mining engineering principles and practices	4.1. Identify and evaluate ***mining system*** types and methods 4.2. Identify stable mining ***structures*** and slope stability from engineering analysis 4.3. Identify and evaluate mining constraints impacting on the stable mining structure

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	and slope stability 4.4. Identify and evaluate equipment requirements, appropriate for the mine closure
5. Establish the mine closure system	5.1. ***Design*** and establish the legislative, statutory, legal and site requirements on mine closure 5.2. Design and establish the mine environmental management system for mine closure 5.3. Design and establish the hazards and risk management systems for mine closure 5.4. Design and complete closure system documentation
6. Audit and review the effectiveness of the mine closure system	6.1. ***Audit*** the legislative, statutory, legal and site requirements on mine closure for compliance 6.2. Audit the mine environmental management system for mine closure for legal and site compliance 6.3. Audit the hazards and risk management systems for mine closure for compliance with site requirements 6.4. Audit ***monitoring*** systems for compliance with statutory and site standards 6.5. Audit recording systems for compliance with site requirements 6.6. Identify and assess future mine closure requirements and standards and incorporate into future planning procedures 6.7. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain mine closure management systems:

- apply legislative, organisation and site requirements and procedures
- read, interpret, apply and communicate technical information, rules, procedures, regulations
- read, interpret and apply legislation
- access, interpret and apply technical information
- access, interpret and apply mine survey information
- access and analyse archival and historical information related to the mine
- develop and maintain risk management procedures and policies
- provide leadership and guidance for group activities
- apply effective communication techniques
- facilitate and document risk control planning
- apply records and document maintenance requirements
- apply procedures for monitoring and determining changes to process
- explain complex information to superiors/subordinates
- provide coaching and mentoring support
- adopt communications styles appropriate to listeners and situations, including selecting an appropriate time and place
- take a leading role in initiating action and making decisions
- listen actively, ask questions, clarify points and rephrase others' statements to check mutual understanding

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain mine closure management systems:

- accessing, evaluating and applying data from organisational systems
- action planning methods
- advanced negotiation skills
- advanced written and oral communication methods
- community safety control responsibilities
- environmental management
- geophysical control systems

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- human resource management
- mine operating procedures
- organisational goals and objectives
- rehabilitation requirements and techniques
- reporting and recording procedures
- risk control and management systems
- safety and health rules, policies, procedures and regulations
- statutory and site rules, policies, procedures and regulations
- statutory/legal controls
- work procedure/instruction writing

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing and maintenance of mine closure management systems • implementation of procedures and techniques for the safe, effective and efficient completion of the establishing and maintenance of mine closure management systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to establish and maintain mine closure management systems • consistent and timely establishing and maintenance of mine closure management systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain mine closure management systems
	  • consistent and timely gaining of approval of

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	mine closure management systems • provision of clear, timely required support and advice on the implementation of mine closure management systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Historical information may include:	• caving characteristics • existence of previous workings within the ore body • fill characteristics • hanging wall and footwall technical data • hydrology • mass blasts • over and underlying and adjacent rock formations • permeability of rocks and faults • physical property testing results of rock types • pillar strengths and dimensions • Radon gas content • sedimentology aspects of the mine site relating to subsidence • sulphide dust explosions • underground fissures and water sources
Resources may include:	• people • buildings/facilities • finance • equipment • power/energy • technology
Hazard is:	• a source of potential harm or a situation with a potential to cause loss

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Management must comply with statutory/legal requirements. These may include:	• environmental - noise/air/water • safety and health requirements • rehabilitation • quantities • zonings • boundaries • processes • royalties • explosives • dangerous goods • mineral resources or appropriate body • federal/state/local government • harbours and marine • port authority • title searches including: • land ownership • council • lease • by-laws • contamination • wildlife corridors • planning and development: • interpreting and communicating information • business/performance plans • location • tender specifications • communication liaison/public relations • resources • statutory/legal/organisational requirements and control • resource parameters • surveying • technical standards established by industry and/or enterprise • legal issues/processes • planning approvals
Management interaction/negotiation may be with, but is not limited to:	• community • contractors • customers • employees • operating managers • project managers

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	• regulatory authorities • safety and health committees/representatives • stakeholders • federal/state/local government • suppliers • tenderers • trainers and training organisations
Risk is:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Geological and hydrogeological information may include:	• caving characteristics • direction and competency of faults or inliers • fill characteristics • hanging wall and footwall technical data • induced collapse • intrusions and deformities • over and underlying rock type • permeability of rocks and faults • physical properties • subsidence • sulphide content of ore • underground fissures and water sources
Stress may include:	• horizontal and vertical tectonic induced stress • mining induced stress
Mining systems may include:	• bord and pillar • cut and fill • sub-level mining • open stoping • panel stoping • bench stoping
Structure controls include to:	• competency of fill • competency of ground support • direction of mining • influences of stresses and depth • pillar sizes • production sequencing • size of mine opening • stress regimes and base characteristics • systems of mining • underground opening characteristics • water ingression

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Mine **design** may include in whole or in part:	• drives and cross-cuts • fault drivage • fault management • footwall and longwall subsidence • geology • hanging wall and footwall competency requirements • haulages, inclines and declines • legislative and statutory requirements • mining induced stress • modelling • ore grades • over and underlying rock type • partial extraction • pillar extraction • return airways • rises and winzes • roof and floor technical data • sequencing • shaft sinking • shafts and adits • stone drivage • ventilation
Audit is a:	• systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives
Monitoring of activities may include:	• review of written reports • performance appraisal • auditing procedures

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIRAI607A Establish quarry operations

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing quarry operations in the extractive industries. It includes: preparing for the initiation of operations; establishing the human resource requirement for the operation; and establishing the system for physical resource acquisition.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for the initiation of operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing quarry operations 1.2. Access, interpret and clarify the approved site development plan in consultation with internal and external ***stakeholders*** 1.3. Prepare detailed business and marketing plans/budgets/financial models and contingency plans for the operation
2. Establish the human resource requirement for the operation	2.1. Access, interpret and clarify requirements and procedures relating to human resource management 2.2. Establish parameters for employment of site personnel in accordance with site needs 2.3. Select and appoint site management personnel in accordance with organisation's requirements and site parameters 2.4. Identify potential training needs and develop training plan in consultation with site manager 2.5. Develop and implement position descriptions in consultation with site manager and in accordance with requirements and procedures and the site parameters 2.6. Establish site personnel selection procedures in consultation with site manager and in accordance with requirements and procedures
3. Establish the system for physical resource acquisition	3.1. Access, interpret and clarify requirements and procedures relating to the acquisition of physical resources 3.2. Identify the ***physical resources*** required for the safe, effective and efficient operation of the site 3.3. Establish, communicate and ensure the application of parameters for acquisition of physical resources in accordance with site needs and requirements and procedures 3.4. Facilitate and monitor the acquisition of physical resources required for the safe,

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	effective and efficient operation of the site.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish quarry operations:

- apply legislative, organisation and site requirements and procedures
- apply business plan development requirements and procedures
- apply resource plan development requirements and procedures
- apply project budget preparation requirements and procedures
- apply title search procedures
- interpret survey data
- apply procedures for gaining of statutory/legal approvals
- apply tender specifications preparation requirements and procedures
- apply negotiation techniques and contract finalisation requirements and procedures
- apply procedures for the implementation of project management strategies
- apply procedures for the implementation of change
- access and use appropriate technologies
- apply management report preparation and presentation requirements and procedures
- apply techniques for negotiation with internal/external customers, community and statutory/legal authorities
- apply conflict resolution techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish quarry operations:

- quarry design
- market research
- statutory/legal control
- titles management
- organisational objectives
- resource quantification
- project management
- financial models
- fundamentals of contract law
- planning and strategic management
- human resource policies and practices

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- industrial awards/enterprise agreements
- business planning
- risk management
- customer/client relations
- organisational change and development
- quarry operations, plant and equipment
- computer applications
- negotiation techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing of quarry operations • implementation of procedures and techniques for the safe, effective and efficient completion of the establishing of quarry operations • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to undertake and complete the establishing of quarry operations • consistent and timely completion of the establishing of quarry operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the establishing of quarry operations
	  • consistent and timely gaining of approval of proposed quarry operations
	  • provision of clear, timely required support

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	and advice on the implementation of quarry operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Stakeholders may include:	• senior management • operating managers • project managers • other employees • regulatory authority representatives • tenderers • contractors • community • suppliers • customers
Physical resources may include:	• fixed and mobile plan • equipment • buildings • infrastructure • power/energy

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Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI608A Establish quarry development

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing quarry development in the extractive industries. It includes: determining the site development parameters; identifying and securing the development site; preparing the site development plan; and obtaining the site development consent.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine site development parameters	1.1. Identify, interpret and clarify relevant ***compliance documentation*** and use them in the development and document ***site development parameters*** 1.2. Identify, interpret and clarify relevant ***marketing information*** and use it to development and document site development parameters
2. Identify and secure development site	2.1. Identify sites with the potential of meeting the required parameters for the quarry development 2.2. Identify and interpret the titles and zoning on potential development sites 2.3. Obtain ***permission required*** for the investigation of potential quarry development sites 2.4. Organise and manage the ***investigation of potential development sites*** 2.5. Determine the most suitable quarry site based on the outcomes of the investigations and the development parameters and cost of acquisition, development and operation of the site 2.6. Obtain required organisational approvals and secure the development site
3. Prepare site development plan	3.1. Involve ***internal and external stakeholders*** in the planning process in a way that uses their contribution effectively and gains their support for the outcomes 3.2. Identify and document the options for the end use of the site 3.3. Organise and manage community consultation on the proposed site development 3.4. Organise and manage the design and documentation of the preliminary plan of the pit development based on the ***geological***, ***hydrological and survey data*** and relevant legislative and organisation requirements and procedures 3.5. Organise and manage the design and

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	documentation of the preliminary plan of the processing plant to meet the site development parameters and based on the geological, hydrological and survey data and relevant legislative and organisation requirements and procedures 3.6. Organise and manage the design and documentation of the preliminary site access and infrastructure to meet the site development parameters and based on the geological and survey data and relevant legislative and organisation requirements and procedures 3.7. Organise and manage the assessment and documentation of the environmental impact of the proposed site development 3.8. Determine and document ***resource implications*** of the site development plan
4. Obtain site development consent	4.1. Organise and manage the preparation of the development application and the required accompanying documentation 4.2. Identify and provide support required for the site development application 4.3. Communicate the progress and outcomes of the development application to relevant stakeholders

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish quarry development:

- apply legislative, organisation and site requirements and procedures
- interpret and apply geological data
- interpret and apply hydrological data
- interpret and apply survey data
- interpret and apply marketing data
- provide team leadership
- apply procedures for the selection of development strategies
- apply procedures for the selection of plant and equipment
- apply development plans development and initiation procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish quarry development:

- legislative and organisation's risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- geological data
- hydrological data
- survey data
- marketing information
- site development parameters
- site development options and procedures
- consultative and coaching techniques
- team leadership techniques
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- recording and reporting systems
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing of a quarry development • implementation of procedures and techniques for the safe, effective and efficient completion of the establishing of a quarry development • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to undertake and complete the establishing of a quarry development • consistent and timely completion of the establishing of a quarry development
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish a quarry development
	  • consistent and timely gaining of approval of a quarry development
	  • provision of clear, timely required support and advice on the implementation of the

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	quarry development
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Site development parameters may include:	• risk management requirements • occupational health and safety requirements • environmental • minimum operating distances from other operations or neighbouring structures or land use • required production volumes • product requirements • quality requirements • market locations and volumes • existing processing plant capacity • catering for the rock, sand or gravel characteristics • raw feed requirements to meet product needs • annual extraction or sales limitations • potential environmental works • potential processing plant location • raw feed haulage requirements • land clearance requirements • stripping and stockpiling of soil requirements • progressive and final rehabilitation requirements • final landform and use requirements • bench heights limitations • water management requirements • general development consent requirements

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	• general operating hours limitations
Marketing information may include:	• product specifications • sales volumes • market locations
Permission required may include:	• entering into option agreements • payment of access fees • entering into rehabilitation agreements
Investigation of potential development sites may include:	• search of geological survey data • title search • zoning search • field geological investigation • drilling programs • trial blasts • trail excavation • testing of raw feed samples • collection and analysis of hydrological data • community consultation • consultation with regulatory authorities
Internal and external stakeholders may include:	• senior management • operating managers • project managers • other employees • regulatory authority representatives • tenderers • contractors • community • suppliers • customers
Geological data may include:	• limits of the deposit • rock (or other resource) types and characteristics • faults and joints • water tables or other water sources
Hydrological data may include:	• rainfall • surface water • catchment areas • run-off characteristics • groundwater • existing streams, bores and dams
Survey data may include:	• site and neighbouring land form • site and neighbouring boundaries and

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	structures • site and neighbouring roads and other infrastructure • approved limits of extraction • title details
Resource implications may include:	• human • fixed and mobile plan • equipment • technology • buildings • infrastructure • power/energy • financial

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI609A Establish and maintain electrical installations, reticulation and protection system

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining the mine electrical installations, reticulation and protection systems in the coal mining industry. It includes providing the following: power supply systems; electrical protection systems; cables from power source to point of usage; mobile machinery and electrical apparatus; overall electrical services that apply to production systems; and safe electrical work procedures.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Provide power supply systems for the mine site	1.1. Access, interpret and apply the ***compliance documentation*** requirements related to establishing and maintaining of ***mine electrical power supply systems*** 1.2. Install, maintain, review and modify mine power supply systems 1.3. Undertake processes and procedures to ensure reliability and quality of supply taking into account transients, harmonics, over-voltages, voltage regulation, lightning and stray currents 1.4. Plan and install alternative power supply associated with mine site conditions and safety needs 1.5. Undertake processes and procedures to protect high energy sources (sub stations and transformers) through the selection and installation of switchgear and protective devices 1.6. Provide mine illumination systems and equipment in accordance with site operations and safety needs 1.7. Plan and install battery and associated charging equipment in accordance with mine site conditions and safety needs 1.8. Review audit and maintain all power supply systems
2. Provide electrical protection system for mine sites	2.1. Access, interpret and apply the compliance documentation requirements related to ***mine electrical protection system*** 2.2. Install and maintain the electrical protection system 2.3. Identify, isolate, rectify faults in electrical installations and verify ability of the system through recognised decision-making processes, including the use of fault level calculations, discrimination and component ratings 2.4. Apply management decision-making processes for the maintenance, examination and testing of electrical protection systems

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	relative to mine site and safety needs 2.5. Review, modify, audit and maintain all electrical protection systems and devices
3. Provide cables from power source to point of usage	3.1. Access, interpret, apply and implement the compliance documentation requirements related to provision and use of ***mine cables*** 3.2. Identify, select and install mine cables 3.3. Identify, report and rectify mine cable faults and hazards in accordance with mine site and hazard control requirements 3.4. Inspect mine cables for their integrity, usage, consequence of fault/damage and previous repairs 3.5. Carry out management, inspection, application, testing, fault finding and repair
4. Provide mobile machinery and electrical apparatus	4.1. Access, interpret, clarify and apply the compliance documentation requirements related to provision and use of mobile machinery and electrical apparatus 4.2. Identify, select and install mobile machinery and electrical apparatus 4.3. Inspect, monitor, report and rectify mobile machinery and electrical apparatus faults and ***hazards*** 4.4. Carry out testing
5. Provide overall electrical services that apply to production systems	5.1. Access, interpret, clarify and apply the compliance documentation requirements related to overall electrical services that apply to production systems 5.2. Select, install, monitor and maintain mine ***communication systems*** 5.3. Select, install, monitor, modify and maintain the electrical components of the gas monitoring and detection systems 5.4. Select, install, monitor, modify and maintain ***control systems*** 5.5. Control, monitor and rectify electromagnetic interference that may affect the safe use of electrical systems and other mining equipment 5.6. Select, install, monitor, modify and maintain ***remote control systems*** on mining equipment 5.7. Select, install, monitor, modify and

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	maintain welding equipment and energy delivery sources, including pre and post operations 5.8. Identify, control and manage hazards from electrostatic charges
6. Provide safe electrical work procedures	6.1. Access, interpret, clarify and implement the compliance documentation requirements related to safe electrical work procedures 6.2. Monitor and audit ***safe electrical work procedures*** 6.3. Determine and implement training needs

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain the mine electrical installations, reticulation and protection systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
- apply the principles of electrical installations, reticulation, control and protection system theory
- apply procedures for the evaluation of designs and installations of electrical installations, reticulation, control and protection systems at a mine in terms of safety requirements
- apply risk management processes for the risks associated with and consequences of failure of electrical installations, reticulation, control and protection systems at a mine
- apply risk management processes for the risks associated with and consequences of changes to electrical installations, reticulation, control and protection systems at a mine
- apply develop procedures, for the management, operation, testing and maintenance of the mines electrical installations, reticulation, control and protection systems
- apply procedures for the planning, coordination and documentation of work on the mines electrical installations, reticulation, control and protection systems
- apply training needs analysis

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain the mine electrical installations, reticulation and protection systems:

- legislative and site requirements, inspections, and reporting procedures
- electrical protection theory, including earthing systems, coordination and fault level calculations, step and touch potential management
- fault discrimination and fault clearance characteristics of equipment
- mining electrical protection systems, including earth continuity monitoring, earth leakage protection, earth fault current limitation and relevant standards
- typical low and high voltage switching and distribution systems on mines

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- transient over-voltages, harmonics and lightning theory, hazards and protection schemes
- hazards associated with high energy systems in mining
- mining cables, faults and consequences, cable protection systems, standards and cable repair
- classification of hazardous areas and explosion-protected electrical equipment principles, general requirements, verification, testing and standards
- automatic control system hazards, protection schemes and standards
- electromagnetic interference hazards, protection schemes and standards
- management and control of processes for change to software and hard wired based systems
- electromagnetic interference hazards, protection schemes and standards
- radio remote control systems hazards, protection schemes and standards
- safety protective devices associated with welding machines such as Voltage Reducing Devices
- the principles of electrical installations, reticulation, control and protection system theory
- the risks associated with and consequences of failure of electrical installations, reticulation, control and protection systems at a mine
- the risks associated with and consequences of changes to electrical installations, reticulation, control and protection systems at a mine

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishment and maintenance of mine electrical installations, reticulation and protection systems • implementation of procedures and techniques for the safe, effective and efficient completion of the establishing and maintenance of mine electrical installations, reticulation and protection systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to establish and maintain mine electrical installations, reticulation and protection systems • consistent and timely completion of the establishing and maintenance of mine electrical installations, reticulation and protection systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and

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	maintain the mine electrical installations, reticulation and protection systems • consistent and timely gaining of approval of mine electrical installations, reticulation and protection systems • provision of clear, timely required support and advice on the implementation of mine electrical installations, reticulation and protection systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mine power supply systems include:	• from extra low through to high voltage switching and distribution systems on mines as well as mine earthing systems, UPSs, generators/alternators
Electrical protection system for mine sites will include:	• over current and earth fault protection systems • earth continuity monitoring systems and devices • earth leakage protection systems and devices • earth fault current limitation systems • frozen contactors (loss of vacuum) systems and devices
Electrical protection systems in mines shall include, but not be limited to:	• protection against short-circuit • over-current • earth fault • earth leakage
Mine cables may include:	• feeder • trailing and reeling cables • all other cabling used for power reticulation, control, data and signalling in the mining environment
Hazards may include:	• electric shock • burns • electric arcing and explosions • electric ignition of flammable gases and dusts • transient over-voltage

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	• lightning • uncontrolled operation of machinery • loss of communications • failure of protection systems • hazardous area electrical equipment for mines, including certified explosion protected electrical equipment for underground and surface mines
Communications systems may include:	• Telephone • Radio • PED • microwave and • hardwired systems for voice and data communications
Control systems are systems that automatically control equipment such as:	• winders • wash plant • other related operational production systems / processes • mobile machinery • conveyors • longwall
Remote control systems include systems used to operate fixed, transportable and mobile mining machinery from a distance. They may be:	• radio controlled • infra red control • umbilical control
Safe electrical work procedures may include:	• identification and classification of hazardous areas • restoration and removal of power • isolation • electrical testing • welding • electric shock protocols • purging

Unit Sector(s)

Resources and Infrastructure

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI610A Establish and maintain mechanical standard and engineering practices for transport and production equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining mechanical standard and engineering practices for transport and production equipment in the coal mining industry. It includes: developing the transport and production systems; selecting equipment for the transport and production systems; establishing systems and procedures to install and commission equipment; establishing systems for the operation and maintenance of production and transport systems and equipment; and establishing systems for audit and review of production and transport systems and equipment.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop production and transport systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining mechanical standard and engineering practices for transport and production equipment 1.2. Identify the requirements for, and purpose of, production and ***transport systems*** in accordance with the system of mining 1.3. Identify systems options from an analysis of all relevant technical, operational and financial information 1.4. Establish ***specification*** for the production and transport system from a comprehensive analysis of operating requirements 1.5. Select the preferred systems options on the basis of performance against specification requirements
2. Select equipment for production and transport systems	2.1. Identify the mechanical requirements for and purpose of transport and ***production equipment*** against systems requirements 2.2. Conduct a detailed scoping of the operational requirement and develop key selection criteria, including ***hazard*** identification and ***risk*** analysis 2.3. Establish specification for the required production and/or transport equipment 2.4. Select the preferred equipment solutions on the basis of performance against specification requirements
3. Establish systems and procedures to install and commission equipment	3.1. Establish systems to identify hazards and analyse and evaluate risks associated with the installation of production and transport systems and equipment 3.2. Plan and prepare for integration of new and existing mine production and transport systems and processes 3.3. Establish procedures for installing and commissioning production and transport systems and equipment 3.4. Establish systems and procedures, to satisfy identified production and transport

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	systems training requirements
4. Establish systems for the operation and maintenance of production and transport systems and equipment	4.1. Establish operational procedures for production and transport systems and equipment and incorporate into site documentation 4.2. Establish ***maintenance*** procedures for production and transport systems and equipment from site and legislative requirements, and incorporate into ***site documentation*** 4.3. Establish procedures for reviewing and modifying work processes 4.4. Establish emergency response and evacuation plans and procedures in accordance with site requirements 4.5. Establish the system of recording and reporting production and transport equipment information
5. Establish systems for audit and review of production and transport systems and equipment	5.1. Establish mechanical procedures to audit and review equipment compliance in accordance with legislative and site requirements 5.2. Identify and assess future production and *transport systems* and equipment requirements, and incorporate into planning processes 5.3. Establish procedures to audit and review the currency and compliance of operation and maintenance relating to production and transport systems and equipment 5.4. Establish procedures for incorporating feedback into the ***audit***/review system 5.5. Establish procedures to confirm the currency, relevance and compliance of the training program against identified requirements 5.6. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit 5.7. Establish procedures to audit emergency response and evacuation systems for compliance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain mechanical standard and engineering practices for transport and production equipment:

- apply legislative, organisation and site requirements and procedures
  - access, interpret and apply:
  - technical information
  - briefings and handover details
- apply the principles of mine design
- apply hazard identification and risk management processes
- apply work planning and coordination processes
- apply training needs analysis
- interpret and apply manufacturers' instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain mechanical standard and engineering practices for transport and production equipment:

- legislative requirements and instructions, including transport rules, maintenance schemes, standard operating procedures, training, testing on diesel vehicles, battery charging, underground fuel depots, conveyor belts
- mine operation procedures
- geological structures
- mine plans
- mine design relating to production and transport systems and equipment
- production and transport systems and equipment management requirements
- site environmental monitoring requirements
- risk management procedures
- production and transport systems and equipment legislative inspection requirements
- mine reporting procedures
- emergency response and evacuation planning processes and techniques
- audit review processes and techniques
- production and transport equipment and systems (types, uses, characteristics and limitations appropriate for safe operation at the mine site)
- energy sources, including electrical, hydraulic, pneumatic, diesel

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- safety design features of production and transport systems
- standard operating procedures relating to production and transport equipment
- stores system
- specification design criteria, including noise, dust, lighting, ergonomics, remote control, physical clearance, confined space, visibility, seating vibration and machine equipment and personal protection
- training programs
- a basic knowledge of computer based systems relating to production and transport systems
- fire fighting systems

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Evidence Guide

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Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing and maintaining of mechanical standard and engineering practices for transport and production equipment • implementation of procedures and techniques for the safe, effective and efficient completion of the establishing and maintenance of mechanical standard and engineering practices for transport and production equipment • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to establish and maintain mechanical standard and engineering practices for transport and production equipment • consistent and timely completion of the establishing and maintenance of mechanical standard and engineering practices for transport and production equipment
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:

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	• working with others to establish and maintain mechanical standard and engineering practices for transport and production equipment • consistent and timely gaining of approval of mechanical standard and engineering practices for transport and production equipment • provision of clear, timely required support and advice on the implementation of mechanical standard and engineering practices for transport and production equipment
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Transport systems include capacities for personnel, equipment/materials and product and may be:	• wheeled, which may include:
	  • rubber tyred man transport
	  • multipurpose vehicles
	  • load haul dump
	  • forklifts
	  • front end loader
	  • skid steer loader and grader
	• railed, which may include:
	  • locomotives (electric/diesel)
	  • rail mounted personnel carriers
	  • rolling stock
	  • drift haulage systems
	• tracked, which may be fixed or mobile and may include:
	  • shearer carriers
	  • personnel carriers
	  • chock recovery vehicles (mules)
	  • mine dozer
	• skidded
	• conveyor systems, which may include:
	  • conveyor belts
	  • drive heads
	  • tail ends transfer points
	  • surge bins

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	• inter seam bins • fabricated bins • product slurry pump systems, which may include: • batching stations • dewatering systems • watering reticulation pumping stations • shaft/drift winding, which may include product, personnel and material and may include: • head gear • cages and skips • winding apparatus and communications • control system • discharge and loading facilities • counter balances
Specifications may include:	• performance requirement • costs • dimensions • capacity • OHS requirements • training requirements • key selection criteria
Production equipment may include:	• shearer • armoured face conveyor • pantech • chocks • stage loader • face drill rigs • shuttle cars • ram cars • ratio feeders • breaker line support • roof bolters (mobile and hand held) • rib bolters • road header • continuous miners • in-seam miners • high wall miners • auger miners • loaders

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	• shotfiring • hydraulic mining
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Maintenance may be divided into:	• predictive • preventive • breakdown
Site documentation and training policy may include:	• legislative requirements • management plans and procedures
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI611A Establish and maintain a surface mine mechanical plant management system

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining a surface mine mechanical plant management system in the coal mining industry. It includes: Identifying, analysing and evaluating hazards and risks associated with the use of mechanical equipment and the control options and measures; establishing, implementing, auditing and reviewing the mechanical plant management system.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify, analyse and evaluate hazards and risks associated with the use of mechanical equipment in a surface coal mine	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining a surface ***mine mechanical plant management system*** 1.2. Identify, evaluate and clarify mine conditions which contribute to ***hazardous environments*** 1.3. Identify, analyse and evaluate ***hazards*** and ***risks*** relating to ***mechanical plant*** 1.4. Identify, analyse and evaluate hazards and risks relating to fire initiate and/or supported by mechanical equipment 1.5. Identify, analyse and evaluate hazards and risks relating to storage of dangerous goods
2. Identify, analyse and evaluate hazards and risk control options and measures	2.1. Identify, analyse and evaluate hazardous environment control techniques 2.2. Identify, analyse and evaluate fire protection and prevention methods and systems on mechanical equipment 2.3. Identify, analyse and evaluate methods and systems to control noise, dust, and other emissions initiated from or created by mechanical equipment 2.4. Identify, analyse and evaluate methods for working at heights 2.5. Develop systems to maintain the integrity of safety critical functions of mechanical equipment 2.6. Develop systems to control hazards in lifting and towing systems for mechanical equipment 2.7. Develop systems to control ***hazards associated with transport*** equipment and other plant 2.8. Develop systems to protect people in their ***interrelationship with mechanical equipment*** in the surface environment 2.9. Evaluate the uses of mine monitoring and information systems to control hazards and risks on mechanical equipment 2.10. Develop systems to control hazards

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	for energy dissipation and isolation systems on mechanical equipment 2.11. Identify, analyse and evaluate methods and systems to control hazardous substances initiated from or used by mechanical equipment 2.12. Develop systems for the interaction and/or failure of transport and production equipment
3. Establish the mine mechanical plant management system	3.1. Access, interpret and clarify the legislative and site requirements related to mechanical plant and equipment 3.2. Establish mechanical plant objectives, systems, descriptions and responsibilities and incorporate into the mine mechanical plant management system 3.3. Consult with relevant stakeholders in the development of the mine mechanical plant management system 3.4. Design mechanical plant management systems to satisfy the ***operational systems and conditions*** of the mine 3.5. Incorporate ***maintenance*** and inspections systems to ensure the equipment is safe to operate 3.6. Incorporate systems to monitor and test the performance of safety critical functions on mechanical plant and equipment 3.7. Incorporate systems to control noise, dust, other emissions and other hazardous substances 3.8. Incorporate systems to develop ***safe work procedure*** 3.9. Incorporate systems for the management of mechanical contractors 3.10. Develop and establish mechanical ***engineering standards*** 3.11. Develop and establish mechanical equipment information recording and reporting procedures, including defect reporting and rectification 3.12. Establish a program, including systems and procedures, to satisfy mechanical equipment ***training*** requirements

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	3.13. Incorporate ***audit*** and review requirements and update procedures into the mine mechanical plant management system
4. Implement the mechanical plant management system	4.1. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the mine mechanical plant management system 4.2. Communicate to all personnel, including contractors, roles and responsibilities, as specified in the mine mechanical plant management system 4.3. Implement the mechanical plant training program 4.4. Consult with relevant stakeholders and implement changes to the mine mechanical plant management system
5. Audit and review the mechanical plant management system	5.1. Audit mine mechanical engineering standards for compliance with statutory and mine site requirements 5.2. Audit the maintenance program and procedures for compliance with the mine mechanical plant management system and statutory requirements 5.3. Audit recording and reporting systems for compliance with the mine mechanical plant management system 5.4. Audit mechanical plant management training program for currency, relevance and compliance with the requirements of the mine mechanical plant management system 5.5. Establish procedures for non compliance s revealed by audit and modify the management plan where appropriate 5.6. Review the mine mechanical plant management system

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain a surface mine mechanical plant management system:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- apply the principles of mine design
- apply hazard identification and risk management processes
- apply work planning and coordination processes
- apply training needs analysis
- interpret and apply manufacturer instructions
- apply effective communication techniques
- access, evaluate and apply data from monitoring systems and equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain a surface mine mechanical plant management system:

- legislative and statutory requirements for mechanical plant and equipment
- the emergency response and disaster planning processes and techniques
- audit review processes and techniques
- mechanical engineering standards
- safety critical function of mechanical equipment
- mine operating procedures for mechanical plant and equipment
- mine design relating to mechanical plant and equipment
- options to control hazards and risks relating to mine mechanical plant and equipment , including fire protection and prevention, lifting and towing systems, storage of hazardous substances and the interrelationship between people and mechanical equipment
- energy sources, including protection and reticulation systems for electrical, hydraulic, compressed air, diesel
- mine fires; the types, sources of ignition and possible impacts on plant and

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equipment

- a basic knowledge of computer based systems relating to the monitoring, and operation of mine mechanical plant and equipment
- fire fighting systems
- specification for mine plant and equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing and maintaining of a surface mine mechanical plant management system • implementation of procedures and techniques for the safe, effective and efficient completion of the establishing and maintaining of a surface mine mechanical plant management system • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to establish and maintain a surface mine mechanical plant management system • consistent and timely completion of the establishing and maintaining of a surface mine mechanical plant management system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain a surface mine mechanical plant management system

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	• consistent and timely gaining of approval of a surface mine mechanical plant management system • provision of clear, timely required support and advice on the implementation of a surface mine mechanical plant management system
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mechanical plant management system establishes procedures for maintaining safe equipment , including:	• hazard identification and quantification • risk management • consultation • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review
Hazardous environment may include but not limited to:	• coal storage bins • reclaim tunnels • confined spaces • gases • restricted work area • flammable environments, i.e. those related to heat sources, fuel sources and ignition sources, e.g. engine wiring, hydraulics in engine bays
Hazards and risks to be identified, analysed and clarified in the **mechanical plan management system** include:	• explosion initiate from mechanical equipment • fire initiate and/or supported by mechanical equipment • hazardous substances used for mechanical equipment • toxic substances generated by mechanical equipment • the release of uncontrolled kinetic energy (unplanned movements) on mechanical

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	equipment • the interaction and/or failure of transport and production equipment • the use and storage of high pressure fluids • moving and rotating parts on mechanical equipment • fluid injection incidents • dangerous goods, e.g. LPG, flammable liquids
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Hazards associated with transport equipment and other plant may include:	• tyre and rim failure • interaction between light and heavy vehicles • overhead power lines • restricted vision • equipment working around draglines
Interrelationship with mechanical equipment in the surface environment may include:	• access systems • guarding • remote and/or automatic control • restricted working areas • safe standings/operating zones • ergonomics and vibrations • vision • manual handling • working at heights • emergency egress systems
Operational systems and conditions may include but is not limited to:	• methods of mining (overburden and coal) • weather • grades • water • drilling and explosives • haul road design • dredging and pumping • electrical reticulation • productivity • environmental considerations
Maintenance is to restore or keep at the level that it was originally	• inspection and testing of plant and equipment • monitoring of plant and equipment • servicing of equipment

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designed to, by:	• repairing of equipment • overhauling of equipment
Safe work procedure may include:	• cutting and welding in coal mines • energy isolation and dissipation • confined spaces
Engineering standards may include but is not limited to:	• mechanical plant maintenance procedures • system for the modification and rectification of mechanical equipment • systems for erection of plant
Training applies to:	• mine workers • tradespeople • permanent employees • contractors • mine officials • other special requirements
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation policy and objectives

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRAI612A Establish and maintain underground product haulage and transport systems

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining underground product haulage and transport systems in the metalliferous mining industry. It includes: developing product haulage and transport systems; selecting equipment for product haulage and transport systems; establishing installation and commissioning procedures; establishing systems for the operation and maintenance of product haulage and transport systems and equipment; and establishing systems for audit and review of product haulage and transport systems and equipment.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop product haulage and transport systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining metalliferous mining underground product haulage and ***transport systems*** 1.2. Identify the requirements for, and purpose of product haulage and transport systems in accordance with the system of mining 1.3. Identify systems options from an analysis of all relevant technical, operational and financial information 1.4. Develop a ***specification*** for the product haulage and transport system from a comprehensive analysis of mine needs 1.5. Select preferred systems options on the basis of performance against criteria
2. Select equipment for product haulage and transport systems	2.1. Identify the requirements for, and purpose of product haulage and transport equipment against systems requirements 2.2. Conduct a detailed scoping of the work requirement and develop key selection criteria, including hazard identification and risk analysis 2.3. Develop a specification for the required product haulage and/or transport equipment 2.4. Select the preferred equipment solutions on the basis of performance against criteria
3. Establish installation and commissioning procedures	3.1. Establish procedures to identify hazards and analyse and evaluate risks associated with the installation of product haulage and transport systems and equipment 3.2. Develop and establish procedures for integrating new and existing mine product haulage and transport systems and processes 3.3. Develop safe operating procedures and rules from a detailed analysis of legislative and worksite requirements 3.4. Develop and establish product haulage and transport systems and equipment installation and commissioning procedures

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	3.5. Establish a program, including systems and procedures, to satisfy identified product haulage and ***transport systems training*** requirements 3.6. Establish emergency response and evacuation *plans* and procedures in accordance with site requirements
4. Establish systems for the operation and maintenance of product haulage and transport systems and equipment	4.1. Develop operational procedures for product haulage and transport systems and equipment and incorporate into ***site documentation*** 4.2. Develop ***maintenance*** procedures for product haulage and transport systems and equipment from site and legislative requirements, and incorporate into site documentation 4.3. Develop and establish procedures for reviewing and modifying work processes
5. Establish systems for audit and review of product haulage and transport systems and equipment	5.1. Establish procedures to evaluate and confirm system/equipment compliance with statutory and site requirements 5.2. Identify and assess future product haulage and transport systems and equipment requirements and incorporate into ***planning*** processes 5.3. Establish procedures to confirm the currency of and compliance with product haulage and transport maintenance and ***safety standards*** 5.4. Establish the system of recording and reporting product haulage and transport equipment information 5.5. Establish procedures for incorporating feedback into the audit/review system 5.6. Establish procedures to confirm the currency, relevance and compliance with the training program against identified requirements 5.7. Establish procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit 5.8. Audit emergency response and evacuation plans and procedures for compliance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain underground product haulage and transport systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - briefings and handover details
- apply hazard identification and risk management processes
- apply work planning and coordination procedures
- apply training needs analysis
- interpret and apply manufacturer's instructions
- apply maintenance survey requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain underground product haulage and transport systems:

- audit review processes and techniques
- computer based systems
- emergency response and evacuation planning processes and techniques
- fire fighting systems and precaution rules
- geological structures
- legislative and statutory requirements and instructions including transport rules, maintenance schemes, standard operating procedures, training, battery charging, positioning of fuel depots, conveyor belts
- maintenance surveys
- mine design relating to product haulage and transport systems and equipment
- mine operation procedures
- mine plans
- mine reporting procedures
- power sources including electrical, hydraulic, pneumatic, diesel
- product haulage and transport systems and equipment statutory inspection requirements
- product haulage and transport systems equipment management requirements
- product haulage and transport equipment and systems; the types, uses,

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characteristics and limitations appropriate for safe operation at the mine site

- risk management procedures
- safety design features of product haulage and transport systems
- site environmental monitoring requirements
- specification design criteria including noise, dust, lighting, ergonomics, remote control, physical clearance, confined space, visibility, seating vibration and machine equipment and personal protection
- stores system
- training and assessment systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing and maintaining of underground product haulage and transport systems • implementation of procedures and techniques for the safe, effective and efficient completion of the establishing and maintenance of underground product haulage and transport systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to establish and maintain underground product haulage and transport systems • consistent and timely completion of the establishing and maintenance of underground product haulage and transport systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain underground product haulage and

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	transport systems • consistent and timely gaining of approval of underground product haulage and transport systems • provision of clear, timely required support and advice on the implementation of underground product haulage and transport systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Transport systems include capacities for personnel, equipment/materials and product and may include:	• wheeled, including:
	  • rubber tyred man transport
	  • multipurpose vehicles
	  • forklifts
	  • front end loader
	  • skid steer loader
	• railed, including:
	  • locomotives (electric/diesel)
	  • rolling stock
	• skidded
	• water borne
	• pipeline, including:
	  • batching stations
	  • dewatering systems
	  • water reticulation pumping station
	• conveyor system, including:
	  • conveyor belts
	  • drive heads
	  • tail ends transfer points
	  • surge bins
	  • fabricated bins

Specifications may include:	• performance requirements • costs • dimensions

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	• capacity • safety and health requirements • training requirements • key selection criteria
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Safe operating procedures are:	• also known as standard operating procedures, safe working procedures and standard working procedures
Site documentation and training policy may include:	• statutory and legislative requirements • management plans and procedures
Maintenance may be divided into:	• predictive • preventive • breakdown

Planning may include:	• interpreting and communicating information
	• business/performance plans
	• location
	• tender specifications
	• resources
	• statutory/legal/organisational requirements and control
	• resource parameters
	• best practice
	• technical standards established by industry and/or enterprise
	• planning approvals
	• surveying
	• infrastructure/technology requirements and would typically incorporate the following specifications:
	  • products
	  • production rate
	• recyclable materials
	• hours per week of operation
	• waste and stockpiles
	• water management
	• transportation systems
	• safety and health/environmental
	• all weather dust and noise levels/controls

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	access/haul roads
Safety standards may be contained in:	• legislation and regulations • relevant international/Australian standards • management plans • health and safety policy • code of practice • industry guidelines • approved standards • manufacturer's instructions • standard operational procedures • job instructions (or equivalent)
Audit is:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Unit Sector(s)

Resources and Infrastructure

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRIS201B Conduct local risk control

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of local risk control in resources and infrastructure industries. It includes identifying hazards; assessing risk and identifying unacceptable risk; identifying, assessing and implementing risk treatments; and completing records and reports.

Application of the Unit

This unit is appropriate for those working in entry level operational roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify hazards	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting local risk control 1.2. Inspect work area conditions to identify potential ***hazards*** in the workplace 1.3. Apply existing procedures to deal with recognised hazards 1.4. Recognise the type and scope of unresolved hazards and their likely impact
2. Assess ***risk*** and identify unacceptable risk	2.1. Assess and determine ***consequence*** if the event should occur 2.2. Consider and determine ***likelihood*** of the event 2.3. Identify criteria for the acceptability/unacceptability of the ***risk*** or source from the appropriate party 2.4. Assess risk against criteria to identify if it warrants '***unacceptable risk***' status and either action or refer to the appropriate party
3. Identify, assess and implement risk treatments	3.1. Identify and consider all possible ***risk treatment options*** 3.2. Identify options by preliminary analysis and consideration of possible options 3.3. Analyse options, including the identification of resource requirements 3.4. Select most appropriate action for dealing with the situation 3.5. Plan and prepare the course of action in detail and acquire/obtain required resources 3.6. Implement the risk treatment 3.7. Review risk management processes
4. Complete records and reports	4.1. Communicate information on the course of action and implementation 4.2. Complete ***records and reports*** for hazards and actions from personal risk assessment as specified by legislation and site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct local risk control:

- apply legislative, organisation and site requirements and procedures
- speak clearly and directly, listen carefully to instructions and information, respond to and clarify directions
- collect, analyse and organise information
- access, interpret and apply site information
- work with other team members
- apply teamwork to a range of situations
- apply problems solving skills
- apply decision making skills
- show initiative in adapting to changing work conditions or contexts
- apply time management
- take responsibility for self organisation of work priorities
- apply mathematical skills to perform a basic risk ranking of hazards
- interpret and apply material safety data sheets (MSDS)

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct local risk control:

- risk management processes and methods, including: identifying hazards, assessing risks, determining acceptability of risks, identifying controls
- AS/NZS 4360-2004 Risk Management
- specific worksite risk management procedures
- specific worksite safety systems information
- specific worksite communication, reporting and recording procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to conduct local risk control • implementation of requirements, procedures and techniques for the safe, effective and efficient conduct of local risk control • working with others to undertake and conduct of local risk control that meets all of the required outcomes • consistent timely completion of conducting local risk control that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and conduct of local risk control

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Hazards may include:	• equipment • stored energy • methods • plans • people • the work environment
Risk is defined as:	• The chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Risk treatment is defined as:	• selection and implementation of appropriate options for dealing with risk
Consequence is defined as:	• the outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain
Frequency is defined as:	• a measure of likelihood expressed as the number of occurrences of an event in a given time
Likelihood is used as:	• a qualitative description of probability and frequency
Probability is defined as:	• the measure of the chance of occurrence expressed as a number between 0 and 1
Criteria for the acceptability/ unacceptability of the risk must be determined by:	• the organisation's internal policy, goals and/ or objectives in reference to relevant legislation

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Risk treatmentoptions may include:	• eliminating the hazard • substitution • engineering controls • administrative controls (procedures, etc) • personal protective equipment.
Records and reports may include:	• hazard reporting forms • supervisor/deputy/OCE reports • incident reports • near miss reports • shift reports • JSAs • Take 5 • Step Back

Unit Sector(s)

Risk Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRIS301B Apply risk management processes

Modification History

Not applicable.

Unit Descriptor

This unit covers the application of risk management processes in resources and infrastructure industries. It includes identifying hazards; assessing and identifying unacceptable risk; identifying and recommending treatments; contributing to the implementation of treatments; and reviewing safety system documentation.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify hazards	1.1 Access, interpret and apply ***compliance documentation*** relevant to the application of risk management processes 1.2 Inspect and analyze work area conditions regularly and systematically to identify potential ***hazards*** 1.3 Access interpret and apply ***existing procedures*** to control identified hazards 1.4 Identify hazards not controlled by existing procedures 1.5 Recognise the type and scope of yet to be resolved ***hazards*** and their likely impact
2. Assess and identify unacceptable risk	2.1 Consider and determine the ***likelihood*** of the event happening 2.2 Evaluate and determine the ***consequence*** if the event should occur 2.3 Consider and determine the risk level (likelihood and consequence combined) 2.4 Identify or source the ***criteria for determining the acceptability/unacceptability of the risk*** 2.5 Evaluate the risk against criteria to identify if it warrants 'unacceptable risk' status and refer the findings to the appropriate person
3. Identify and recommend controls	3.1 Identify the range of ***controls*** which may eliminate or minimise the risk 3.2 Conduct a detailed analysis of feasible options including the identification of resource requirements 3.3 Select the most appropriate control for dealing with the situation
4. Contribute to the implementation of control	4.1 Plan selected control in detail, including the identification of ***resource requirements*** 4.2 Gain authorisation for selected control in accordance with site requirements 4.3 Document and review controls in accordance with site working instructions (or equivalent) for the job 4.4 Apply procedures to control recognised hazards 4.5 Communicate information on the control and its implementation to the relevant people

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5. Review safety system documentation	5.1 Monitor and review site working instructions (or equivalent) for adherence to compliance documentation and site requirements 5.2 Action amendments to the site working instructions (or equivalent) or refer the matter to the appropriate party for follow up

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required for the safe, effective and efficient application of risk management processes:

- apply legislative, organisation and site requirements and procedures
- research, analyse and apply relevant operational information
- demonstrate and apply common industry terminology
- interpret work procedures and processes
- use effective communication skills, including questioning and active listening skills with supervisors and other employees
- write reports
- apply planning and organising skills to the risk management processes
- demonstrate teamwork to involve and engage the employers/supervisors in the risk management processes
- apply problem solving skills to technical resources and infrastructure issues

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required for the safe, effective and efficient application of risk management process:

- OHS legislation and regulations
- appropriate resources and infrastructure context and language
- topics or subject areas which are target for assessment and treatment
- site risk management systems and their application
- conventions and requirements for written communications including report writing

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying risk management processes • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of risk management processes • working with others to undertake and complete the application of risk management processes that meets all of the required outcomes • consistent timely completion of risk management processes that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application of risk management processes

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Risk Management is defined as:	• the culture, processes and structures that are directed towards the effective management of potential opportunities and adverse effects
Existing procedures may include those focussed on:	• personal safety (e.g. personal protective equipment, medical standards, drug and alcohol, stress management and evacuation) • equipment and machinery isolation • protection and guarding • hazard identification and monitoring • chemical safety • fire safety • other potential emergency related circumstances • uncontrolled energy • change
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Hazards may involve:	• equipment • methods/plans • people • the work environment • uncontrolled energy • changeover • nearby activities • different conditions
Likelihood is defined as:	• a qualitative description of probability and frequency
Probability is defined as:	• the measure of the chance of occurrence expressed as a number between 0 and 1
Consequence is defined as:	• The outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury,

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	disadvantage or gain
Criteria for the acceptability/ unacceptability of the risk must be determined by:	• the organisation's internal policy, goals and/or objectives in reference to relevant legislation
Controls may include option type in sequence such as:	• eliminating the hazard • substitution • engineering controls • administrative controls (procedures, etc) • PPE
Resources may include:	• people • finance • equipment • environment • buildings/facilities • technology • information
Site working instructions may include:	• applicable commonwealth/state/territory legislation and code of practice relating to the industry, dangerous and hazardous goods, environmental protection and safety and health • worksite safety management systems • manufacturer's documentation and handbooks • workplace operating procedures and policies • materials safety data sheet • emergency procedures • safety alert
Communications may include:	• face to face • in writing • by telephone or by other electronic means • formal • informal

Unit Sector(s)

Risk Management

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIRIS401A Apply site risk management system

Modification History

Not applicable.

Unit Descriptor

This unit covers applying the site risk management system in resources and infrastructure industries. It includes: providing information to the work group; applying and monitoring participative arrangements, the procedures for providing training, for identifying hazards and assessing risks, for controlling risks; and the procedures for maintaining records.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as risk management technical specialist, on worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Provide information to the work group	1.1. Access, interpret and apply ***compliance documentation*** relevant to applying the site risk management system 1.2. Accurately explain relevant compliance documentation to the work group 1.3. Provide information on the ***organisation's risk management policies***, ***procedures and programs*** to the work group in an accessible manner 1.4. Regularly provide and clearly explain information about ***identified hazards*** and the outcomes of ***risk assessment*** and control to the work group
2. Apply and monitor participative arrangements	2.1. Explain the importance of effective consultative mechanisms in managing risk to the work group 2.2. Conduct and monitor consultative procedures to facilitate participation of work groups in managing work area hazards 2.3. Promptly deal with issues raised through ***consultation*** in accordance with ***organisational consultation procedures*** 2.4. Record and promptly communicate the outcomes of consultation over risk management issues to the work group
3. Apply and monitor the procedures for providing training	3.1. Systematically identify ***risk management*** training needs in line with organisational requirements 3.2. Make arrangements, in consultation with relevant individuals, to meet risk management training needs of team members. 3.3. Provide workplace learning opportunities and coaching and mentoring assistance to facilitate team and individual achievement of identified training needs 3.4. Identify and report costs associated with provision of training for work team for inclusion in financial planning
4. Apply and monitor procedures	4.1. ***Identify*** and report ***hazards and risks*** in the

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for identifying hazards and assessing risks	work area in accordance with risk management and related ***policies*** and procedures 4.2. Action team members hazard reports promptly in accordance with organisational procedures
5. Apply and monitor the procedures for controlling risks	5.1. Apply procedures for ***controlling risk*** using the hierarchy of controls and organisational requirements 5.2. Identify and report inadequacies in existing risk control measures in accordance with hierarchy of controls 5.3. ***Monitor*** outcomes of reported inadequacies where appropriate to ensure a prompt organisational response
6. Apply and monitor the procedures for maintaining records	6.1. Ensure accurate completion and maintenance of ***risk management records*** of incidents in the work area in accordance with organisational requirements 6.2. Use aggregate information and data from work area records to identify hazards and monitor risk control procedures in work area

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply site risk management systems:

- apply analyse skills to identify hazards and assess risks in the work area
- apply data analysis skills including:
  - incident monitoring
  - environmental monitoring
  - evaluation of effectiveness of risk control measures
- apply assessment skills to assess resources required to apply risk control measures
- apply literacy skills for comprehending documentation and interpreting risk management requirements
- apply coaching and mentoring skills to provide support to colleagues
- demonstrate the ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply site risk management systems:

- relevant legislation from all levels of government that effect business operations
- legal responsibilities of employers, supervisors and employees in the workplace
- site policies and procedures relating to hazard management, fire emergency, evacuation, incident and accident investigation and reporting
- relevance of consultation as a key mechanism for improving workplace risk management
- principles and practices of risk management
- characteristics and composition of the workgroup

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to apply the site risk management system • implementation of appropriate procedures and techniques for the safe, effective and efficient application of the site risk management system • working with others to plan, prepare and apply the site risk management system • provision of clear and timely instruction and supervision by the individual of those involved in applying the site risk management system • evidence of the consistent successful application of the site risk management system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances • Where applicable, physical resources should include equipment modified for people with disabilities • Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and apply the site risk management system
	  • provision of clear and timely instruction and supervision by the individual of those involved in the applying of the site risk management system

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Organisation's risk management policies, **procedures and programs** may include:	• risk management policy • site procedures and work instructions for hazard identification • site procedures and work instructions for risk assessment, selection and implementing of risk control measures • site incident (accident) investigation requirements • site risk audits and investigations requirements • site consultative arrangements for employees in work area • site hazard report procedures • site operating procedures and instructions • site emergency and evacuation procedures • site purchasing policies and procedures • site plant and equipment maintenance and use instructions • site hazardous substances use and storage procedures and work instructions • site dangerous goods transport and storage procedures and work instructions • site OHS arrangements for on site contractors, visitors and members of the public • site First Aid provisions/medical practitioner contacts and attention instructions • site access procedures and instructions

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Risk management is:	• the culture, processes and structure that are directed towards the effective management of potential opportunities and adverse risk

Risk management may be applied to:	• statutory compliance
	• OHS
	• environment
	• quality
	• property security
	• business risks, such as:
	  • credit management
	  • capital expenditure
	  • sales and marketing
	  • finance and accounting

Risk management processes are:	• the systematic application of management policies, procedures and practices to the task of establishing the context, identifying, analysing, evaluating, treating, monitoring and communicating risk
Hazard is:	• a source of potential harm or a situation with a potential to cause loss
Hazards identification may occur through activities such as:	• workplace inspections in area of responsibility • consulting work team members • housekeeping • risk audits and review of audit reports • daily informal employee consultation and regular formal employee meetings • checking equipment before and during work • review of health, safety, environmental, quality and other risk related records
Risk assessment is:	• the overall process of risk analysis and risk evaluation
The policy is:	• the statement of overall intent and direction of the organisation in respect of the specific area of managerial responsibility
Consultation would typically include:	• regulatory authorities • tenderers • project managers • contractors • employees • community • customers • suppliers

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Organisational consultation procedures may include:	• formal and informal meetings • health and safety committees • other committees, such as, planning and purchasing • involvement of employees in management and planning meetings • early response to employee suggestions, requests, reports and concerns put forward to management • counselling/disciplinary processes
Risk control is:	• the selection and implementation of appropriate options for dealing with risk
Procedures for controlling risk may include:	• removing the cause of the risk at its source (eliminating the hazard) • selecting control measures in accordance with the hierarchy (i.e. work through the hierarchy from most effective to least effective) • job/process/workplace re-design • consultation with employees and their representatives
Monitoring is:	• checking, supervising, observing critically, or recording the progress of an activity, action or system on a regular basis in order to identify change
Risk management records may include:	• audit and inspection reports • hazard registers • risk analysis records • risk treatment reports • minutes of meetings (risk management, occupational health and safety, environmental etc) • induction, instruction, training and assessment • manufacturer's and supplier's information • dangerous goods and hazardous substances registers • plant and equipment maintenance and testing reports • workers compensation and rehabilitation records • First Aid/medical records • major incident and emergency response instructions • emergency contact lists

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	• financial records • contract documents

Unit Sector(s)

Risk Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRIS402A Carry out the risk management processes

Modification History

Not applicable.

Unit Descriptor

This unit covers the skills and knowledge required to carry out risk management processes in the coal and metalliferous mining industries. It includes: determining the risk management process; identifying hazards; assessing risk; identifying unacceptable risk and potential actions; deciding on, implementing or facilitating of actions; reviewing the implementation of action; auditing the risk management process; and completing records and reports.

Application of the Unit

This unit is appropriate for those working in supervisory and risk management technical specialist roles within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine the risk management process	1.1. Access, interpret and apply ***compliance documentation*** relevant to carry out risk management processes 1.2. Identify and determine the process to be used for ***risk management*** 1.3. Identify, develop and document ***parameters of the risk assessment task*** 1.4. Access, interpret and apply the data required to complete the risk assessment task
2. Identify hazards	2.1. Identify and confirm types of potential ***hazards*** by reference to site circumstances, history and/or precedence 2.2. Break process into steps or parts for detailed hazard identification 2.3. Add to the defined process any potential variations from changes to work practices, systems or technology 2.4. Analyse the steps or parts of the process, and identify and document ***loss scenarios***
3. Assess risk	3.1. Determine the ***likelihood*** of the loss scenario 3.2. Analyse and determine the ***consequence*** if the loss scenario should occur 3.3. Determine the ***risk level*** of the loss scenario
4. Identify unacceptable risk	4.1. Source or determine site criteria for assessing the ***acceptability of risks*** in conjunction with the appropriate party 4.2. Determine the risk level or score by the application of the approved site criteria 4.3. Clarify findings which are ambiguous, unclear or of doubtful accuracy by seeking expert advice
5. Identify potential actions	5.1. Identify existing controls 5.2. Identify, analyse and document the range of ***risk controls*** which may be appropriate for identified unacceptable risks 5.3. Identify possible options for risk control by the use of the ***hierarchy of controls***,

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	considering the potential for operational effectiveness 5.4. Verify feasible options for risk control by preliminary analysis and consideration, including potential to provide an integrated response to the range of issues
6. Decide on action	6.1. Select most appropriate risk controls for the situation from the feasible options 6.2. Confirm the selected course of action following analysis of resource requirements, cost, safety and welfare issues within site constraints 6.3. Document the selected course of action
7. Implement or facilitate action	7.1. Implement directly, or facilitate through others, the course of action 7.2. Observe and apply all ***safety regulations and procedures*** 7.3. Communicate to all involved parties relevant information related to the new/revised ***work procedures*** and their implementation in accordance with site requirements
8. Review the implementation of action	8.1. Determine and facilitate an ongoing review process to ensure implementation and application of risk controls in accordance with risk assessment outcomes, new or revised work procedures and accident investigation outcomes 8.2. Review process, actions and controls to ensure continuing effectiveness in the changing work environment. 8.3. Respond to, or refer to the appropriate party for follow-up action, anomalies and shortcomings identified during the review process
9. Audit the risk management process	9.1. Conduct ***audits*** of risk management processes and work procedures to ensure compliance and effectiveness 9.2. Respond to changed requirements identified during audits in a systematic and timely manner 9.3. Complete and retain all risk management documentation covering the reason for, and changes made

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10. Complete records and reports	10.1. Produce, process and maintain all risk management ***documentation and reports***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to carry out a risk management processes:

- apply legislative, organisation and site requirements and procedures risk management processes
- read, interpret, apply and communicate technical information, procedures, regulations in the workplace
- apply effective communication with a range of people in the workplace
- facilitate a group of people to achieve a required outcome
- apply interview processes
- facilitate and document scoping sessions for risk assessment
- facilitate risk assessment exercises
- participate in a risk assessment as team members
- apply proactive hazard identification
- apply hazard analyse to identify and score the risk
- select the appropriate treatments reduce unacceptable risk
- apply Risk Assessment documentation requirements
- apply Risk Management documentation requirements and procedures
- maintain relevant records and documents
- audit systems for compliance and effectiveness, and recommend changes to improve effectiveness
- monitor and recommend changes to processes
- identify hazards which may have acute and long-term effects on people

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to carry out a risk management processes:

- relevant site and equipment safety requirements
- statutory and site rules, policies, procedures and regulations
- the risk management process
- risk assessment scoping methods
- risk assessment methods including:
- identifying hazards
- assessing risks

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- determining acceptability of risks
- identifying existing controls
- determining adequacy of current controls
- identifying new potential controls
- risk management documentation and reporting methods used at a mine site
- methods of identifying Risk Control actions based on cost, safety and welfare issues
- action planning and implementation methods
- review and auditing methods
- basic human physiology
- the effects of hazards on people's health and hygiene
- causes and effects of common diseases and disabilities

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to carry out the risk management processes • implementation of appropriate procedures and techniques for the safe, effective and efficient carrying out of risk management processes • working with others to plan, prepare and conduct risk management processes • provision of clear and timely instruction and supervision by the individual of those involved in carrying out the risk management processes • evidence of the consistent successful application in carrying out the risk management processes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and carry out the risk management processes
	  • provision of clear and timely instruction and supervision by the individual of those involved in carrying out the risk management processes

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Risk Management is defined as:	• the systematic application of management policies, procedures and practices to the tasks of identifying, analysing, assessing, treating and monitoring risk
Risk Assessment is defined as:	• the process used to determine risk management priorities by evaluating and comparing the level of risk against predetermined standards, target risk levels or other criteria
Parameters of the risk management task may include:	• objectives • system boundaries • hazard and consequence type • methods/team processes • timing, venue/locations • consultation and communication processes
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Hazards may involve:	• equipment and materials • people • methods/plans/work systems • the work environment
Loss scenarios may include:	• hazards described as: • incidents

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	• events or • accidents
Likelihood is used as:	• a qualitative description of probability and frequency
Consequence is defined as:	• the outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain
Risk level is determined by:	• combination of likelihood and consequence
Risk Acceptance is defined as:	• an informed decision to accept the likelihood and the consequences of a particular risk. The criteria for acceptability of risks must be determined by the organisation's internal policy, goals and/or objectives
Risk Control is defined as:	• that part of risk management which involves the provision of policies, standards and 2procedures to eliminate, avoid or minimise adverse risks facing an enterprise
Risk controls may include:	• those focussed on personal safety - e.g., personal protective equipment, medical standards, drug and alcohol, stress management, evacuation procedures, fitness for duty • those focussed on equipment/machinery safety - e.g., isolation, protection and guarding • hazard identification and monitoring • procedures for incident/emergency circumstances e.g. fire safety procedures, chemical safety procedures
Hierarchy of control should be considered using option types in sequence from:	• eliminating the hazard • substitution • engineering controls • administrative controls (work procedures, etc), and finally • personal protective equipment (PPE)
Safety regulations and procedures may contain:	• legislation and regulations • relevant Australian standards • management plans • OHS policies • code of practice • manufacturer's instructions
Work procedures may include:	• standard operating procedures (SOPs) • safe operating procedures (SOPs)

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	• safe work procedures (SWPs) • safe job procedures (SJPs)
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Audits may be:	• conducted internally, or may use external personnel
	• aspects to be audited may include:
	  • parameters of the risk management task
	  • the process and resulting documentation used for risk management
	  • work procedures
	  • implementation plans and processes
	  • results of reviews of implementation

Risk management documentation and reports may include:	• objectives • parameters of the risk management task • methodology • results and recommendations • the risk assessment forms • action planning documents

Unit Sector(s)

Risk Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRIS501A Implement and maintain management system to control risk

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation and maintenance of management systems to control risk in resources and infrastructure industries. It includes developing the framework for and processes to support site risk management systems; planning and implementing risk management systems; and monitoring, reviewing and updating risk management processes.

Application of the Unit

This unit is appropriate for those working in a management roles or risk management technical roles, managing or advising the implementation and maintenance of management systems to control risk within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop the framework for the site risk management system	1.1. Access, interpret and apply compliance documentation relevant to implementing and maintaining management systems to control risk 1.2. Develop and document site objectives in the area of managerial responsibility, in consultation with relevant personnel, and conforming to the organisation's policy and system's procedures 1.3. Develop and document the structures for the application of the management system, in consultation with relevant personnel 1.4. Define, allocate and document the responsibilities for applying the management system in job descriptions and duty statement for all relevant site positions
2. Develop the processes to support the site risk management system	2.1. Identify existing and potential site ***hazards****and****risks*** in the area of managerial responsibility from site inspection and trends identified from the record system 2.2. Access, interpret and clarify the organisation's criteria for assessing and ***treating risks*** 2.3. Develop and document detailed ***site procedures and practices*** for the application of the management system in ***consultation with relevant personnel*** 2.4. Identify, obtain and maintain information sources and expert advice required to support the management system
3. Plan and implement the risk management system	3.1. Plan, schedule and document how the management systems will be introduced to the entire work site 3.2. Identify, seek and/or provide ***resources*** for the operation of the management system, in a timely and consistent manner 3.3. Provide and explain information on the site management system in a form readily accessible to site employees 3.4. Provide or arrange appropriate development and/or training for site

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	personnel on the risk management systems' site procedures and practices 3.5. Make available information on known and intended process changes and enhancements to ***site personnel*** 3.6. Provide support and encouragement to those responsible for the detailed system activities 3.7. Ensure all management systems' ***records and reports****are* produced, processed and maintained
4. Monitor, review and update the risk management processes	4.1. ***Monitor*** the management systems' activities and achievement targets and provide/focus resources to ensure the implementation plan is satisfied 4.2. Review and update the management systems' implementation plan periodically and when changing circumstances are anticipated or occur 4.3. Complete and retain ***management systemdocumentation*** including the reasons for and changes made to the system

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement and maintain management systems to control risk:

- apply legislative, organisation and site requirements and procedures to implement and maintain management systems to control risk
- develop and maintain site procedures and practices
- read, interpret, apply and communicate technical information, rules, procedures, regulations
- document and facilitate management planning
- maintain relevant records and documents
- monitor and decide on changes to process
- provide leadership and guidance for group activities
- explain complex information to superiors/subordinates
- provide coaching and mentoring support
- apply active listening
- apply negotiation skill
- apply sensitivity to the needs and feelings of others
- actively encourage the free exchange of information

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required for the implementation and maintenance of management systems to control risk:

- relevant legislative requirements
- roles and responsibilities of relevant personnel within the organisation
- action planning methods
- human resource management processes
- method of identifying appropriate action based on cost, safety, and welfare issues
- work procedure and instruction documentation requirements
- reporting and recording procedures
- work site operating procedures
- hazard identification processes
- risk assessment processes
- risk treatment processes
- documentation methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation and maintenance of management systems to control risk • implementation of procedures and techniques for the safe, effective and efficient implementation and maintenance of management systems to control risk • the identification of the relevant information and scope of the work required to meet the required outcomes • working with others to undertake and complete the implementation and maintenance of management systems to control risk • consistent successful implementation and maintenance of management systems to control risk
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's knowledge required to undertake the implementation and maintenance of management systems to control risk
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the implementation and maintenance of management systems to control risk
	  • provision of clear and timely required support and advice on the implementation

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	and maintenance of management systems to control risk
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

The **areas of managerial responsibility** covered by this may include:	• statutory compliance
	• occupational health and safety
	• environment
	• quality
	• property security
	• business risks, such as:
	  • credit management
	  • capital expenditure
	  • sales and marketing
	  • finance and accounting

The **policy** is:	• the statement of overall intent and direction of the organisation in respect of the specific area of managerial responsibility
The **system's procedures** are:	• the procedures that support and expand on the policy and set out the requirements for implementing the system on individual sites. They provide direction and guidance to those responsible for implementation of the system and in the preparation of site-specific work procedures, instruction and practices to put the system into effect
System's procedures may include:	• identification of hazards • risk identification • risk assessment • risk treatment • interim solutions

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	• dealing with unplanned incidents and events • consultation • communication • monitoring • review • record keeping • reporting • training
Hazards are:	• sources of potential harm or situations with the potential to cause loss
Risk is:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequence and likelihood
Risk identification is:	• the process of determining what can happen, why and how
Risk treatment is:	• the selection and implementation of appropriate options for dealing with risk
Risk treatment should:	• considered using options in sequence from eliminating the hazard, substitution, engineering controls, administrative controls, and finally PPE
Site procedures and practices may include:	• standard operating procedures • safe operating procedures • work instructions • emergency procedures • allocation of responsibilities • permit requirements • sampling, testing and worksite inspection requirements • documentation and reporting requirements
Consultation with relevant personnel would typically include:	• senior management • subject matter experts • regulatory authorities • tenderers • project managers • contractors • employees • community • customers • suppliers

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Resources may include:	• people • finance • equipment • buildings/facilities • technology • information
Site personnel may include:	• employees • contractors
Records and reports may include	• results • recommendations • assessment forms • action planning documents, etc
Monitor is:	• to check, supervise, observe critically, or record the progress of an activity, action or system on a regular basis in order to identify change
Management systems documentation may need to include:	• requirements for the maintenance of records for statutory/legal breaches • provision of information and training • regulations and code of practice relating to statutory/legal compliance • site representatives and committees • issue resolution

Unit Sector(s)

Risk Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIRIS601A Establish and maintain the risk management system

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishing and maintaining of risk management systems in resources and infrastructure industries. It includes: establishing the framework processes to support the system; planning and facilitating the implementation of the system; auditing the risk management processes; and ensuring completion of records and reports.

Application of the Unit

This unit is appropriate for those working in a management role or as a technical specialist, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish the framework for the system	1.1. Access, interpret and apply ***compliance documentation*** relevant to establishing and maintaining risk management systems to control risk 1.2. Develop the ***policy*** and objectives that express the organisation's commitment to risk management 1.3. Establish and implement the structure and framework for the risk management system 1.4. Define, allocate and document responsibilities for risk management in job descriptions and duty statement for all relevant positions
2. Establish processes to support the system	2.1. Develop, document and communicate detailed ***systems procedures*** covering ***risk identification***, ***assessment***, ***treatment***, communication, consultation, monitoring and review 2.2. Provide or arrange appropriate development and/or training for those who have responsibilities within the ***risk management*** system 2.3. Identify, obtain and maintain information sources required to support the risk management system and make them available to those who implement the risk management processes 2.4. Provide information on known and intended process changes and enhancements to those responsible for implementing the risk management processes 2.5. Determine and make available organisation's criteria for assessing the acceptability of risks to those responsible for implementing risk management processes 2.6. Obtain and provide expert advice, as necessary, to those responsible for implementing risk management processes
3. Plan and facilitate the	3.1. Plan, schedule and document the systems

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implementation of the system	coverage of the entire work environment 3.2. Monitor the system activities and achievement targets and provide and focus ***resources*** to ensure the work plan is satisfied 3.3. Provide support and encouragement to those responsible for the detailed system activities 3.4. Review and update the system work plan when changing circumstances are anticipated or occur
4. Audit the management processes	4.1. Formally ***audit risk management processes***, including operating procedures and implementation processes, to ensure compliance and effectiveness 4.2. Respond to changed requirements disclosed during audits in a systematic and timely manner 4.3. Complete and retain ***risk management documentation*** including the reasons for and changes made to the system
5. Completion of records and reports	5.1. Ensure all risk management documentation is produced, processed and maintained

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain risk management systems:

- apply legislative, organisation and site requirements and procedures
- read, interpret and apply legislation
- apply procedures for developing and maintaining procedures and policies
- read, interpret, apply and communicate technical information, rules, procedures, regulations
- apply procedures for facilitating and documenting management planning
- apply procedures for monitoring and deciding on changes to process
- provide leadership and guidance for group activities
- communicate effectively in the workplace
- explain complex information to superiors/subordinates
- apply coaching and mentoring support
- apply active listening
- show sensitivity to the needs and feelings of others
- actively encourage the free exchange of information

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain risk management systems:

- organisation's policies, goals and objectives
- relevant legislative requirements
- action planning methods
- negotiation methods
- written and oral communication methods
- human resource management processes
- method of identifying appropriate action based on cost, safety, and welfare issues
- work procedure and instruction writing requirements
- reporting and recording procedures
- work site operating procedures
- hazard identification processes
- risk assessment processes
- risk treatment processes

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- documentation methods and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions that are to apply in establishing and maintaining of risk management systems • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of risk management systems • the identification of the relevant information and scope of the work required to meet the required outcomes • working with others to establish and maintain risk management systems • consistent and timely establishing and maintaining of risk management systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain risk management systems
	  • consistent and timely gaining of approval for the establishing and maintaining of risk management systems
	  • provision of clear, timely required support and advice on the application of risk management systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
The policy is:	• the statement of overall intent and direction of the organisation in respect of the specific area of managerial responsibility
Risk is	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequence and likelihood
Risk management is	• the culture, processes and structure that are directed towards the effective management of potential opportunities and adverse risk

Risk management may be applied to:	• statutory compliance
	• occupational health and safety
	• environment
	• quality
	• property security
	• business risks, such as:
	  • credit management
	  • capital expenditure
	  • sales and marketing
	  • finance and accounting

The system's procedures are	• the procedures that support and expand on the policy and set out the requirements for implementing the system on individual sites. They provide direction and guidance to those responsible for implementation of the system including the preparation of site specific work procedures, instruction and practices to put the

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	system into effect
System's procedures may include:	• identification of hazards • risk identification • risk assessment • risk treatment • interim solutions • dealing with unplanned incidents and events • consultation • communication • monitoring • review • record keeping • reporting • training
Risk identification is	• the process of determining what can happen, why and how
Risk assessment is	• the overall process of risk analysis and risk evaluation
Risk treatment	• should considered using options in sequence from eliminating the hazard, substitution, engineering controls, administrative controls, and finally personal protective equipment
Consultation would typically include:	• regulatory authorities • tenderers • project managers • contractors • employees • community • customers • suppliers
Risk management processes are	• the systematic application of management policies, procedures and practices to the task of establishing the context, identifying, analysing, evaluating, treating, monitoring and communicating risk
Monitor is	• to check, supervise, observe critically, or record the progress of an activity, action or system on a regular basis in order to identify change
Resources may include:	• people • finance • equipment

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	• buildings/facilities • technology • information
Risk management documentation may need to include:	• requirements for the maintenance of records for statutory/legal breaches • provision of information and training • regulations and code of practice relating to statutory/legal compliance • site representatives and committees • issue resolution
Audit is	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives
Records and reports may include:	• audit and inspection reports • hazard registers • risk analysis records • risk treatment reports • minutes of meetings (risk management, occupational health and safety, environmental etc) • induction, instruction, training and assessment • manufacturer's and supplier's information • dangerous goods and hazardous substances registers • plant and equipment maintenance and testing reports • workers compensation and rehabilitation records • First Aid/medical records • major incident and emergency response instructions • emergency contact lists • financial records • contract documents

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Unit Sector(s)

Risk Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM201A Handle resources and infrastructure materials and safely dispose of non toxic materials

Modification History

Not applicable.

Unit Descriptor

This unit covers the handling of materials and safely dispose of non toxic materials in resources and infrastructure industries. It includes planning and preparing for work; handling and removing waste; and cleaning up.

Application of the Unit

This unit is appropriate for those working in operational support roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply ***work instructions***, ***quality requirements*** and operational details relevant to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** from the site safety plan and organisational policies and procedures, relevant to the allotted task 1.4. Identify and obtain and implement the signage requirements from the project traffic management plan 1.5. Select ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, and check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental protection requirements*** from the project environmental management plan to the allotted task
2. Handle and remove waste	2.1. Comply with materials safety data sheets and requirements of regulatory authorities 2.2. Identify ***hazardous materials*** for separate handling 2.3. Use correct procedures to remove ***non-toxic materials*** 2.4. Use ***dust suppression procedures*** to minimise health risks to work personnel and others materials from workplace traffic or access
3. Clean Up	3.1. Clean, check, maintain and store tools and equipment in accordance with manufacturers' recommendations and standard work practices 3.2. Safely store/stack unused materials for future use 3.3. Clear work area and dispose of or recycle materials in accordance with project environmental management plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to handle resources and infrastructure materials and safely dispose of non toxic materials:

- apply legislative, organisation and site requirements and procedures
- apply teamwork to a range of situations, particularly in a safety context
- solve problems particularly in teams and in dealing practically with safety issues
- show initiative in adapting to changing work conditions or contexts particularly when working across a variety of work placements
- manage time, particularly in organising priorities and planning work
- take responsibility for self organisation of work priorities
- show a willingness to learn and to use a range of mediums to learn

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to handle resources and infrastructure materials and safely dispose of non toxic materials:

- the most commonly encountered waste materials on worksites
- environmental management requirements
- hazardous goods handling in accordance with company procedures
- systems for packing and securing materials for movement
- systems and equipments or materials for the short term protection of stacked/stored materials
- methods of dust suppression
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- project quality requirements
- industry and worksite terminology
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to handle resources and infrastructure materials and safely dispose of non toxic materials • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of handling of resources and infrastructure materials and safe disposal of non toxic materials • working with others to undertake and complete the handling of resources and infrastructure materials and safe disposal of non toxic materials that meets all of the required outcomes • consistent timely completion of handling of resources and infrastructure materials and disposal of non toxic materials that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity • Aboriginal people and other people from a non English speaking background may have second language issues • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the handling of resources and infrastructure materials and safe disposal of non toxic materials

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations • Equal Employment Opportunity, Disability Discrimination
Work instructions may include:	• verbal or written and graphical instructions • plans and specifications • work bulletins • charts and hand drawings • memos • materials safety data sheets (MSDS) and • diagrams or sketches • organisation's work specifications and requirements • instructions issued by authorised organisational or external personnel

Quality Requirements may include:	• dimensions
	• tolerances
	• standards of work
	• material standards as detailed in:
	  • the project drawings,
	  • specifications and
	  • project documentation to meet client satisfaction

Safety requirements may include:	• protective clothing and equipment and is include that prescribed under:
	  • legislation
	  • regulation and
	  • workplace policies and practices
	• use of tools and equipment
	• workplace environment and safety

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	• handling of materials
	• use of fire fighting equipment
	• use of First Aid equipment
	• hazard control and
	• hazardous materials and substances
	• emergency procedures related to equipment operation which are to include but may not be limited to:
	  • emergency shutdown and stopping
	  • extinguishing equipment fires
	  • organisational First Aid requirements
	  • evacuation

Tools and equipment may include:	• brooms • hoses • shovels • rakes • wet and dry industrial vacuum cleaners • wheelbarrows • pallet trolley • materials hoists • forklifts
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Hazardous materials are	• those materials that pose a health risk to humans and animals or cause irreversible damage to the environment and may include toxic chemicals, asbestos and radioactive materials
Non toxic materials are	• those materials that do not pose a health risk through poisoning to humans and animals and may include excavated material that exceeds requirements and off cuts of construction materials such as timber
Dust suppression procedures may include but not be limited to:	• spraying with water • covering and • use of vacuum cleaners

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Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM202A Isolate and access plant

Modification History

Not applicable.

Unit Descriptor

This unit covers the isolation and accessing of plant in resources and infrastructure industries. It includes: determining plant isolations, isolating plant, completing permit-to-work form, and returning plant to service.

Application of the Unit

This unit is appropriate for those working in operational, service or maintenance roles on fixed or mobile mechanical plant and equipment, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine plant isolations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the isolation and accessing of plant 1.2. Identify, record and confirm item(s) of ***plant***, and work to be carried out 1.3. Correctly apply ***permit*** procedure (written or oral) according to site procedures 1.4. Identify ***hazards*** and risks to personal wellbeing and identify and implement ***preventive strategies*** 1.5. Obtain permit clearance in accordance with site procedures before work is commenced
2. Isolate plant	2.1. Resolve ***coordination*** requirements with others at the site prior to commencing and during isolation activities 2.2. Establish and maintain a safe working area in accordance with site ***safety procedures*** 2.3. Carry out isolation of all required energy sources and ***immobilisation of potential energy sources*** in accordance with site permit procedure and ***safety requirements*** 2.4. Place locks and ***tags*** on isolation devices in accordance with the type of permit procedure 2.5. Identify and act on or report breaches in permit procedure safety to authorised personnel in accordance with site procedures
3. Complete permit-to-work form	3.1. Prepare statement of isolations according to site and/or permit procedures 3.2. Complete sign-on and sign-off requirements according to site procedures 3.3. Carry out hand-over of plant and equipment in accordance with site procedures
4. Return plant to service	4.1. Resolve coordination requirements with others at the site prior to commencing and during de-isolation activities 4.2. Receive confirmation that work has been completed and is ready for return to service

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	4.3. Check designated work to be completed in accordance with work/site contract and/or site procedure 4.4. Remove ***locks and tags*** from isolation devices according to site permit or work procedures 4.5. Restore energy sources according to site procedures 4.6. Identify and correct or report situations, which may endanger individuals or workers 4.7. Confirm all permits are cancelled before plant is brought back into operation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to isolate and access plant:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information/maintain accurate records
- identify plant status
- use safety equipment
- apply diagnostic techniques
- use oral and written communications

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to isolate and access plant:

high and low voltage distribution and switching systems

- plant and equipment isolation points
- potential plant and site hazards
- site and equipment safety requirements
- operational and maintenance procedures
- permit-to-work system and documentation
- isolation devices type and purpose
- emergency, fire suppression, fire alert and disaster procedures
- relevant operational and maintenance procedures
- hazard identification and risk assessment response procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the isolation and accessing of plant • implementation of requirements, procedures and techniques for the safe, effective and efficient isolation and accessing of plant • working with others to undertake and complete the isolation and accessing of plant that meets all of the required outcomes • consistent timely completion of the isolation and accessing of plant that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should

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	include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the isolation and accessing of plant

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice
Plant may include:	• mobile plant • bucket wheel/chain excavators • stackers • mobile slew conveyors • hoppers • conveyors • pumps • loading units • bunkers
Permits may include:	• written or oral access procedures to mechanical plant
Hazards may include:	• HV switchgear • dust and water • power lines • overhead service lines • obstructions • structures • other equipment/vehicles • dangerous material • formation/earthworks/batters • underground services • water
Preventive strategies may include:	• locks • tags • barriers • HV isolation gloves for 6.6kV isolation • rubber mat/non-conductive platform • other site prescribed clothing apparel
Coordination may be required	• control centre

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with:	• other operators • mobile plant operators • maintenance contractors • shift supervisors
Safety procedures and practices may be contained in:	• legislation and regulations • relevant Australian standards • management plans • manager's rules • OHS Policy • code of practice • manufacturer's manuals and instructions • safe working or job procedures • training resources
Immobilisation of potential energy source may include:	• protective clothing • non-conductive platform
Safety requirements may also include:	• boarding and disembarking procedures • working behind protective barriers • procedures for clearing blocked chutes and excessive spills • procedures covering moving parts • hot machinery
Tagging may be:	• individual tagging, group tagging or mass tagging
Authorisation of personnel may vary between sites and may include:	• issuing officers • recipients-in-charge

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM203B Use hand and power tools

Modification History

Not applicable.

Unit Descriptor

This unit covers the use of hand and power tools in resources and infrastructure industries. It includes planning and preparing for work, selecting and using hand tools and power tools, and cleaning up.

Application of the Unit

This unit is appropriate for those working in operational, service or maintenance roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1 Access, interpret and apply ***compliance documentation*** relevant to the use of hand and power tools 1.2 Obtain, confirm and apply ***work instructions*** for the allotted task 1.3 Obtain, confirm and apply ***safety requirements*** from the site safety plan and organisational policies and procedures relevant to the allotted task 1.4 Identify, confirm and apply ***environmental protection requirements*** for the allotted task from the project environmental management plan
2. Select and use hand tools	2.1 Select ***hand tools*** consistent with needs of the job 2.2 ***Check tools*** for serviceability and safety, and report faults 2.3 Clamp or fix ***materials*** in position 2.4 Use ***hand tools*** safely and effectively according to their intended use 2.5 Safely locate ***hand tools*** when not in immediate use
3. Select and use power tools	3.1 Select ***power tools and equipment*** consistent with needs of job and in accordance with standard work practice, and report any faults 3.2 Check tools for serviceability and safety, and report faults 3.3 Visually check power leads/hoses for serviceability/safety in accordance with the site safety plan 3.4 Clear route for safe placement and connection of leads/hoses 3.5 Clamp or fix material in position for power tool application where applicable 3.6 Use power tools safely and effectively in application processes 3.7 Locate power tools safely when not in use
4. Clean up	4.1 Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.2 Clean, check, maintain and store machinery, tools and equipment in accordance with manufacturer's recommendations and standard work practices

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Required Skills and Knowledge

Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to use hand and power tools: • apply legislative, organisation and site requirements and procedures • speak clearly and directly, listening carefully to instructions and information • interpret and understand the information required for the preparation and application of hand and power tools, including work instructions, quality assurance procedures, manufacturer's instructions, materials safety data sheets and equipment • apply teamwork to a range of situations, particularly in a safety context • solve problems particularly in teams and in dealing practically with safety issues • show initiative in adapting to changing work conditions or contexts particularly when working across a variety of work placements • manage time, particularly in organising priorities and planning work including the scheduling and use of equipment, materials and tools to avoid back tracking and re work • take responsibility for self organisation of work priorities • show a willingness to learn and to use a range of mediums to learn • use technology related to determining requirements, the planning and application of hand and power tools, including the use of calculations, mechanical equipment and the reporting/recording of results
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to use hand and power tools: • site and equipment safety requirements • hand tools and their application • portable power tools and their application • energy/power sources • materials associated with use in the industry • equipment types, characteristics, technical capabilities and limitations • operational, maintenance and basic diagnostic procedures • materials safety data sheets (MSDS) and materials handling methods • project quality requirements • industry and worksite terminology • electrical, hydraulic and compressed air safety • JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the use of hand and power tools • implementation of requirements, procedures and techniques for the safe, effective and efficient use of hand and power tools • working with others to undertake the use of hand and power tools that meets all of the required outcomes • consistent timely use of hand and power tools that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake the use of hand and power tools

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may include:	• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, materials safety data sheets (MSDS) and diagrams or sketches • plans and specifications • quality requirements, including: dimensions and tolerances, standards of work and material standards • safe work procedures or equivalent related to using hand and power tools
Safety requirements may include:	• protective clothing and equipment • use of tools and equipment • workplace environment and safety • handling of materials • use of fire fighting equipment • use of First Aid equipment • hazard control • hazardous materials and substances • personal protective equipment • emergency procedures related to equipment operation which may include • emergency shutdown and stopping • extinguishing equipment fires • organisational First Aid requirements and • evacuation
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and • clean-up management
Hand tools will include but not be	• clamps

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limited to at least one: • cutting tool • tightening tool • impact tool • digging/leverage tool • measuring tool • securing/clamping tool	• vices • adjustable spanners • crow bars • pinch bars • bolt cutters • chisels • hacksaws • handsaws • hammers • measuring tapes • axes • rakes • hand augers • picks • mattocks • pliers • shovels • spades • sledge hammers • spanners • wrenches • spirit levels and • wire cutters • file • screwdriver retractable cutters
Checking tools is to include:	• checking of electrical safety/inspection tag for currency • equipment defect identification • assessment of conditions and hazards and determination of work requirements
Materials are:	• to include those associated with the use of hand and power tools such as: timber, rock, concrete, metals, plastics
Power tools will include at least two of those powered by but not limited to:	• 240 volt electricity • compressed air • battery driven and • hydraulics
Power tools may include:	• kanga hammers • cut off saws • drills

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	• screwdrivers • angle grinders • pneumatic wrenches • impact hammers • tampers • rotary hammers/drills • circular saws • planers • sanders and • scalers
Equipment is to include:	• power leads and • safety switches and • may include air hoses

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM204B Operate small plant and equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the operating of a range of small plant and equipment in resources and infrastructure industries. It includes the planning and preparation for work, the conducting of pre-operational checks, the use of the plant and/or equipment, and carrying out operator maintenance and cleaning up.

Application of the Unit

This unit is appropriate for those working in operational, service and maintenance roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to operate small plant and equipment 1.2. Obtain, confirm and apply ***work instructions*** for the allotted task 1.3. Obtain, confirm and apply to the allotted task ***safety requirements*** from the site safety plan and organisational policies and procedures 1.4. Select plant, tools and equipment to carry out tasks are consistent with the requirements of the job 1.5. Identify, confirm and apply to the allotted task ***environmental protection requirements*** from the project environmental management plan
2. Conduct pre-operational checks	2.1. Select fuel and lubricants according to manufacturer's specifications 2.2. Check and adjust fuel, oil, hydraulic fluid and water levels according to manufacturer's manual 2.3. Secure/tighten and maintain bolts, nuts, guards and attachment couplings in accordance with manufacturer's instructions 2.4. Check and adjust function of controls and gauges where necessary to comply with manufacturer's manual 2.5. Conduct standard start-up and shutdown procedures according to requirements of operator's manual
3. Use small plant and equipment	3.1. Identify site hazards associated with ***small plant and equipment*** operations and establish appropriate controls in accordance with the requirements of the site safety plan 3.2. Identify and apply operating techniques for small plant and equipment to achieve optimum output in accordance with manufacture's design specifications while maintaining specified tolerances 3.3. Operate machine to produce results within design specifications to meet specified

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	tolerances 3.4. Safely locate plant and equipment when not in immediate use
4. Carry out operator maintenance	4.1. Shutdown plant/equipment and prepare it for ***maintenance*** as per manufacturer's manual and organisational requirements 4.2. Conduct inspection and fault finding in accordance with the manufacture's specifications and/or organisational requirements 4.3. Remove and replace defective parts safely and effectively according to manufacturer's manual and organisational requirements 4.4. Carry out regular programmed maintenance tasks in accordance with the manufacturer's and/or organisational requirements
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, equipment and tools in accordance with manufacturer's recommendations and standard work practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to operate small plant and equipment:

- apply legislative, organisation and site requirements and procedures
- apply clear and direct speaking and active listening skills
- apply teamwork to a range of situations, particularly in a safety context
- apply problem solving techniques, particularly in teams and in dealing with safety issues
- interpret and apply information
- show initiative in adapting to changing work conditions or contexts particularly when working across a variety of work placements
- manage time, particularly in organising priorities and planning work
- take responsibility for self organisation of work priorities
- use a range of mediums to learn

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to operate small plant and equipment :

- small plant and equipment types, characteristics, technical capabilities and limitations
- basic soil types and characteristics
- site and equipment safety requirements
- small plant and equipment operating techniques related to essential tasks
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets (MSDS)and materials handling methods
- project quality requirements
- industry and site specific terminology
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to operate small plant and equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient operating of small plants and equipment • working with others to operate small plants and equipment that meets all of the required outcomes • consistent timely operating of small plants and equipment that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to operate small plants and equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may include:	• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, materials safety data sheets (MSDS) and diagrams or sketches • plans and specifications • quality requirements, including dimensions, tolerances, standards of work and material standards • safe work procedures related to the operation of small plant and equipment on construction sites
Safety requirements may include:	• protective clothing and equipment • use of tools and equipment • workplace environment and safety • handling of materials • use of fire fighting equipment • use of First Aid equipment • hazards and risks control, including: • uneven/unstable terrain • trees • fires • overhead and underground services • bridges • buildings • traffic • embankments • excavations and cuttings • structures and • hazardous materials and substances • safe operating procedures • underground and overhead services • other machines • personnel restricted access barriers • traffic control • working at heights

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	• working in proximity to others • worksite visitors and • the public • emergency procedures, including: • emergency shutdown and stopping • extinguishing equipment fires • organisational First Aid requirements and • evacuation
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise, vibration and dust management and • clean-up management
Small plant and equipment must include Power Sources and at least three other categories. These may include but are not limited to:	Power Sources include: • generator • compressor • inverter • solar Compaction equipment may include: • plate compactor • pedestrian roller • wacker • packer • tamper) Concrete equipment may include: • concrete mixer • batcher • vibration • trowelling machine (helicopter) Excavation equipment may include: • mini loader (dingo) • jackhammer • posthole borer • pedestrian trencher • Cutting equipment may include: • masonry saw • construction saw • band saw

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	Maintenance equipment may include: • mower • brushcutter • mulcher Water equipment may include: • pump • spear • pressure cleaner Lighting equipment may include: • mobile lighting plant Lifting and materials handling • pedestrian forklift • pallet trolleys • hoist Traffic Management may include: • mobile variable message sign
Operator maintenance is to include:	• cleaning • authorised servicing • the monitoring, recording and reporting of faults
Operator maintenance may also include:	• the conduct of authorised minor replacements
Materials may include:	• water • clays, silts, stone, gravel, mud, rock sand, topsoil • bituminous mixes • timber • fuels and oils • power leads • replacement parts and consumables

Unit Sector(s)

Service and Maintenance

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM205A Cut, weld and bend materials

Modification History

Not applicable.

Unit Descriptor

This unit covers the cutting, welding and bending of materials in resources and infrastructure industries. It includes the planning and preparation for the work, the setting up and testing of the equipment, the cutting, heating and bending of materials using oxyacetylene, the shutdown of equipment and the completion of clean-up activities.

Application of the Unit

This unit covers the cutting, non load-bearing welding and bending of materials using manual metal arc welding, oxyacetylene and cutting equipment and systems and LPG. It is appropriate for those working in operational, service and maintenance roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the cutting, welding and bending of materials 1.2. Obtain, confirm and apply work instructions for the allocated work 1.3. Follow safety requirements in accordance with safety plans and policies 1.4. Identify and implement signage/barricade requirements 1.5. Select plant, tools and equipment to carry out tasks that are consistent with the requirements of the job, and check them for serviceability and rectify or report any faults prior to commencement 1.6. Calculate material quantity requirements in accordance with plans and/or specifications 1.7. Identify, obtain, prepare, safely handle and locate materials ready for use appropriate to the work application 1.8. Identify and apply environmental protection requirements for the project in accordance with environmental plans and regulatory obligations
2. Set up and test equipment	2.1. Select and locate correct fire extinguisher to be readily accessible prior to and during operations 2.2. Attach regulators to Oxy and Acetylene bottles in accordance with manufacturer's specifications and OHS regulations 2.3. Purge lines to manufacturer's recommendations prior to lighting up 2.4. Test equipment for leaks and undertake corrective action or report faults 2.5. Select correct pressures and cutting tips in accordance with material to be cut and manufacturer's specifications
3. Cut material using oxyacetylene	3.1. Accurately mark and secure or clamp material ready for cutting 3.2. Light torch correctly and safely according to manufacturer's specifications 3.3. Adjust setting of flame for cutting to

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	manufacturer's recommendations 3.4. Adopt correct cutting position during cutting to set out mark
4. Cut and weld materials using electric welding equipment	4.1. Undertake and verify test runs in accordance with manufacturer instructions and site specifications 4.2. Carry out welding and cutting in accordance with site procedures 4.3. Clean welds using appropriate tools and techniques 4.4. Confirm weld and cut specifications by visual inspection and defects identified and repaired
5. Heat and bend material	5.1. Accurately mark and secure or clamp material ready for bending 5.2. Light torch correctly and safely according to manufacturer's specifications 5.3. Apply heat to specified material and so weakening effects of the heating process are minimised 5.4. Bend material to specification and cool correctly
6. Shutdown	6.1. Switch off torch according to manufacturer's specifications 6.2. Shut off gas supply according to manufacturer's specifications
7. Clean up	7.1. Clear work area and dispose of, reuse or recycle materials in accordance with 7.2. legislation/regulations/code of practice and job specification 7.3. Clean, check, maintain and store plant, tools and equipment in accordance with 7.4. Manufacturer's recommendations and standard work practices 7.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to cut, weld and bend materials:

- apply legislative, organisation and site requirements and procedures
- apply manufacturer's requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply hand-eye coordination
- read and interpret sketches or basic drawings
- identify and select from a range of welding equipment and accessories
- identify and match cutting equipment with specified tasks
- apply environmental compliance requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to cut, weld and bend materials:

- workplace and equipment safety requirements
- quality requirements
- construction and steel fixing terminology
- manual metal arc welding, oxyacetylene and LPG heating and cutting equipment types, characteristics, uses and limitations
- manual metal arc welding, oxyacetylene and LPG heating and cutting equipment set-up and operating techniques
- the types and properties of steel fixing materials
- processes for the calculation of material requirements
- materials safety data sheets (MSDS)
- plans, drawings and specifications
- materials handling, storage and environmentally friendly waste management
- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for cutting, welding and bending of materials • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the cutting, welding and bending of materials • working with others to undertake and complete the cutting, welding and bending of materials that meets all of the required outcomes • consistent timely completion of cutting, welding and bending of materials that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the cutting, welding and bending of materials

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may include:	• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, materials safety data sheets (MSDS) and diagrams or sketches • plans and specifications • quality requirements, including: dimensions, tolerances, standards of work and material standards • operational details • safe work procedures

Safety requirements may include:	• protective clothing and equipment
	• use of tools and equipment
	• workplace environment and safety
	• handling of materials
	• use of fire fighting equipment
	• use of First Aid equipment
	• hazards and risks control, including:
	  • uneven/unstable terrain
	  • trees
	  • fires
	  • overhead and underground services
	  • bridges
	  • buildings
	  • traffic
	  • embankments

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	• excavations and cuttings • structures and • hazardous materials and substances • safe operating procedures • underground and overhead services • other machines • personnel restricted access barriers • traffic control • working at heights • working in proximity to others • worksite visitors and • the public • emergency procedures, including: • emergency shutdown and stopping • extinguishing equipment fires • organisational First Aid requirements and • evacuation
Equipment may include:	• cylinders • regulators • gas tubing • cutting blowpipes • flint lighters • measuring tapes/rules • clamps and • support stands
Materials are to include:	• deformed bars, plain rods, mesh sheets of plain bars and mesh sheets of deformed bars, cutting consumables and may include scaffolding components, pipe sections and structural steel sections
Environmentalprotection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise, vibration and dust management and • clean-up management
Cutting of steel may include:	• cutting up of waste for salvage • cutting reinforcement steel and • cutting holes in plate
Bending is to include:	• reinforcement steel

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Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM207A Apply operational maintenance skills

Modification History

Not applicable.

Unit Descriptor

This unit covers the application of operational maintenance skills in resources and infrastructure industries. It includes: selecting, using and caring for tools; identifying and responding to basic faults in mechanical and electrical systems; and identifying, selecting and using fasteners.

Application of the Unit

This unit is appropriate for those working in operational, service, maintenance and trade support roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select, use and care for tools	1.1. Access, interpret and apply ***compliance documentation*** relevant to the application of operational maintenance skills 1.2. Correctly identify and obtain ***tools*** required for the work 1.3. Inspect and prepare tools for use 1.4. Use tools correctly and safely for their intended purpose 1.5. Identify and respond to tool maintenance requirements in accordance with manufacturer's instructions and work procedures 1.6. Clean tools after use and return/store in accordance with site procedures and practices
2. Identify and respond to basic faults in mechanical systems	2.1. Apply site safety information and procedures, including isolation procedures, when working with mechanical systems 2.2. Identify general components of ***mechanical systems***, and their functions 2.3. Apply techniques to identify and respond to faults 2.4. Rectify or refer faults to others in accordance with site procedures
3. Identify and respond to basic faults in electrical systems	3.1. Apply site safety principles and procedures, including isolation procedures, when working with ***electrical systems*** 3.2. Identify components and functions of basic electrical circuitry 3.3. Apply techniques to identify and respond to faults 3.4. Rectify or refer faults to others in accordance with site procedures
4. Identify, select and use fasteners	4.1. Apply site safety systems and procedures, including isolation procedures, when working with ***fasteners*** 4.2. Correctly identify fasteners and match with the work requirements 4.3. Use/apply fasteners in accordance with

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	manufacturer's instructions and site procedures/practices 4.4. Dispose of discarded materials in accordance with site procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply operational maintenance skills:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access and interpret manufacturer's and site technical information
- match tools with work needs
- apply site isolation procedures
- respond to faults
- diagnose basic faults
- complete reporting systems
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply operational maintenance skills:

- types and uses of oils, greases, hydraulic fluids, brake fluid and other commonly used servicing materials
- site isolation procedures
- site operational and safety procedures
- site procedures relating to operational maintenance
- site maintenance systems and procedures
- types, characteristics, uses and limitations of hand tools
- types, characteristics, uses and limitations of measuring devices
- hand tool maintenance, care and storage procedures
- types, characteristics, uses and limitations of power tools
- power tool maintenance, care and storage procedures
- the functions of major components of common mechanical systems
- the functions of major components of common hydraulic systems
- the functions of major components of common pneumatic systems
- the functions of major components of common lubrication systems
- basic diagnostic processes/techniques of mechanical systems
- major components within common electrical systems
- electrical system basic circuit diagnostic processes and techniques

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- types, uses, grades and limitations of fasteners
- environmental constraints and requirements related to operational maintenance

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying operational maintenance skills • implementation of requirements, procedures and techniques for the safe, effective and efficient application of operational maintenance skills • working with others to undertake and complete the application of operational maintenance skills that meets all of the required outcomes • consistent timely application of operational maintenance skills that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application of operational maintenance skills

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Tools may include:	• hand tools:
	  • spanners
	  • hammers
	  • files
	  • screwdrivers
	  • saws
	  • knives
	  • pipe cutters
	• power-tools:
	  • grinders
	  • drills
	  • saws
	  • jacks
	  • hydraulic spreaders
	  • pneumatic powered tools
	  • measuring devices:
	  • rulers
	  • callipers
	  • vernier callipers
	  • gauges and feeler gauges

Mechanical systems may include:	• hydraulic • lubrication • pneumatic
Electrical systems may cover low	• equipment batteries

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and medium voltage, and may include:	• ignition and operational circuits including lighting circuits
Fasteners may include:	• screws • bolts • staples • clamps • rivets • adhesives

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM208A Perform plant operational maintenance

Modification History

Not applicable.

Unit Descriptor

This unit covers the performing plant operational maintenance in the coal mining industry. It includes: identifying and preparing for maintenance; conducting planned routine maintenance, breakdown maintenance and temporary repairs; and finalising the maintenance activity.

Application of the Unit

This unit is appropriate for those working in a operational or maintenance roles, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and prepare for maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to performing plant operational maintenance 1.2. Obtain, interpret and clarify/confirm work requirements in the form of shift briefings, handover details or work orders before proceeding 1.3. Select, prepare for use and transport equipment, materials and tools required for maintenance to the worksite 1.4. Access and apply safety information and procedures throughout the operations
2. Conduct planned routine maintenance	2.1. Receive schedule for ***planned routine maintenance*** and coordinate resources to carry out maintenance 2.2. Carry out maintenance 2.3. Complete details of routine maintenance actions and record any follow-up action required
3. Conduct breakdown maintenance	3.1. Evaluate the extent of work required to fix the breakdown and put in place site procedures to minimise loss of production 3.2. Carry out ***breakdown maintenance*** 3.3. Record details of maintenance action completed and/or required
4. Conduct temporary repairs	4.1. Identify the location of the problem and prioritise the requirement to minimise loss of production 4.2. Assess the requirement for ***temporary repairs*** and identify and acquire resources 4.3. Carry out the repair 4.4. Record details of temporary repairs
5. Finalise the maintenance activity	5.1. Complete site restoration and housekeeping 5.2. Pass recommendations for changes and improvements to the maintenance processes and procedures to the appropriate person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to perform plant operational maintenance:

- apply legislative, organisation and site requirements and procedures
- apply safety requirements to operational maintenance activities
- access, interpret and apply technical information
- locate and identify equipment and components within the plant
- apply diagnostic techniques
- use relevant hand tools
- maintain equipment records/reports
- comply with site environmental requirements
- dispose of environmentally sensitive oils, fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to perform plant operational maintenance:

- site and equipment safety requirements
- equipment and plant characteristics, technical capabilities and limitations,
- equipment and plant operational procedures
- site equipment and plant maintenance procedures
- site environmental requirements and constraints related to operational maintenance activities

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for performing plant operational maintenance • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of plant operational maintenance • working with others to undertake and complete plant operational maintenance that meets all of the required outcomes • consistent timely completion of plant operational maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete plant operational maintenance

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Planned routine maintenance procedures are those established and authorised for the site and may include:	• screen inspections • pump adjustments • crusher adjustments • belt tracking and tensions • chute inspections • oil levels • roller changes • unbolting pipes and flanges
Breakdown maintenance may include:	• any plant and equipment failure and electrical resets
Temporary repairs may include:	• patching • bandaging • plugging • clipping • stitching

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIISAM209A Carry out operational maintenance

Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of operational maintenance in drilling and metalliferous mining industries. It includes planning and preparing for carrying out of operational maintenance; performing pre-start checks, maintenance and equipment checks; maintaining tools, components and consumables; carrying out hot work; and perform equipment maintenance and field repairs.

Application of the Unit

The unit is appropriate for those in operator, operator assistant and maintenance roles; performing mechanical, hydraulic and electrical operational maintenance on exploration and drilling equipment including, at worksites within:

- Drilling
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for carrying out of operational maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to carrying out of operational maintenance 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential hazards 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Select and wear appropriate personal ***protective equipment***
2. Perform pre-start checks and maintenance	2.1. Inspect and carry out pre-start checks on ***equipment*** 2.2. Complete site and/or company checklist sheet 2.3. Lubricate all systems according to requirements 2.4. Check and top up fluid levels and bleed where necessary 2.5. Check filters and clean or replace if necessary 2.6. Check security of all circulation systems, as required 2.7. Check safety appliances are fitted and in serviceable condition 2.8. Keep cabin, seat belts and windscreen clean and windscreen washer functioning
3. Perform equipment checks	3.1. Observe policies, procedures, ***safety rules*** and site specific instructions 3.2. Carry out timed and regular ***equipment checks***, servicing and lubrication in accordance with procedures, and record details 3.3. Identify ***faults or potential faults*** and report immediately 3.4. Observe isolation, tag out and lock out procedures 3.5. Identify, record and/or report requirement for repair or maintenance and critical time

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	line for rectification 3.6. Monitor effectiveness of maintenance performed
4. Maintain tools, components and consumables	4.1. Follow procedures for tool and component maintenance, and carry out safely and according to instructions. 4.2. Follow site procedures for maintaining and storing ***tools and consumables in good condition***
5. Carry out hot work	5.1. Clear area around the worksite of flammable material 5.2. Position fire extinguishers at company recommended locations 5.3. Undertake ***hot work*** in compliance with district fire controls 5.4. Liaise with ***spotter*** during hot work operations 5.5. Inspect the area prior to leaving to ensure that no potential exists for later combustion
6. Perform equipment maintenance	6.1. Minimise equipment breakdown by regular servicing and ***maintenance*** and performance of overhauls to specifications 6.2. Use tag out and/or lock out when servicing 6.3. Carry out minor servicing of equipment avoiding disruption to production 6.4. Carry out routine inspection, servicing, lubrication and housekeeping tasks to requirements 6.5. Read and follow instructions on maintenance procedures, lubrication, filter change/service accurately 6.6. Identify and change worn parts, and record relative frequency of replacement 6.7. Identify operational faults in and maintain hydraulic, pneumatic and drive systems 6.8. ***Report*** service and repair requirements and take action according to procedures 6.9. Use ***diagnostic and troubleshooting procedures*** and techniques and take action
7. Perform field repairs	7.1. Isolate and rectify equipment faults 7.2. Identify extent of repair needed and obtain spare parts 7.3. Identify, select and use tools required for

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	maintenance and repairs correctly 7.4. Return re-usable components or accessories in accordance with requirements 7.5. Review equipment and re-set in response to variations in production needs 7.6. Recognise system faults and formulate appropriate responses within agreed time lines 7.7. Maintain records of action taken in accordance with site requirements 7.8. Dismantle, assess, service, repair, reassemble and test a given component in a safe manner

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to carry out operational maintenance:

- apply legislative, organisation and site requirements and procedures for carrying out of operational maintenance
- apply in service functions and procedures
- apply diagnostic and troubleshooting procedures
- interpret manufacturers' maintenance and operations manuals
- use hand tools
- solve problems
- use PC software

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to carry out operational maintenance:

- manufacturer's handbooks requirements and procedures
- characteristics, technical capabilities and limitations of equipment
- environmental requirements and procedures
- hot work procedures and techniques
- fire prevention and control techniques and equipment
- mechanical/electrical/hydraulic systems and power tools requirements and procedures
- isolation and tag out procedures
- lubricants and their uses
- purpose of equipment electric and hydraulic indicators and gauges
- characteristics of transmission and drive systems
- recording and reporting requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for carrying out of operational maintenance • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of operational maintenance • working with others to undertake and complete operational maintenance that meets all of the required outcomes • consistent timely completion of operational maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete operational maintenance

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:
	  • nature and scope of tasks
	  • specifications
	  • quality of finished works
	  • achievement targets
	  • operational conditions
	  • obtaining of permits required
	  • site layout
	  • out of bounds areas
	  • worksite inspection requirements
	  • lighting conditions
	  • plant or equipment defects
	  • hazards and potential hazards
	  • coordination requirements or issues
	  • contamination control requirements
	  • environmental control requirements
	  • barricade and signage requirements

Hazards may include those associated with:	• equipment • stored energy • work methods • human error • the work environment

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Coordination requirements may include	• other operators • other maintenance personnel, • supervisors • other worksite personnel
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Equipment may include:	• drilling equipment • camping equipment • navigational aids • mobile laboratory • emergency aids • First Aid pack • communications devices • surveying equipment • sampling devices and storage • 4WD vehicles • mobile computers and associated devices
Equipment checks may include:	• regular visual inspection including pre-start neutral for all control levers • check on correct operation • observation of display instruments and gauges function • observation of recording instruments and gauges • hydraulic system (including filters, strainers, hose, hose fitting and oils) • air systems and filters • vehicles (including wheels, tyres, clutch, brakes and fluid levels) • batteries
Symptoms of **faults** may include:	• indications on instruments or gauges • noises • vibrations • smells • overheated hydraulic motors or lines • visual indicators (e.g. smoke)
Procedures for **keeping tools and consumables in good condition**	• effective storage • use of desiccants • store chemicals (cement, bentonite, and so on)

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may include:	in safe dry conditions secure from livestock
Hot work is any work or task that has the potential to create fire or explosion, and may include:	• welding • grinding • fuel transfer
Spotters are used to:	• ensure that no fires develop from slag or hot metal generated during hot work
Maintenance may include:	• operating checks • daily checks • programmed maintenance • breakdown maintenance • prescribed lubrication
Reporting requirements may include:	• tool records • service and maintenance • metres drilled • operating hours since last service
Diagnostic and troubleshooting procedures may include:	• diagnostics built into equipment • diagnostics applying externally • troubleshooting procedures recommended by manufacturers • troubleshooting procedures developed by organisation • knowledge of sources of help for more complex problems

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM210A Remove and fit wheel assemblies

Modification History

Not applicable.

Unit Descriptor

This unit covers the removal and fitting of wheel assemblies in resources and infrastructure industries. It includes planning and preparing for work; assessing the risk in wheel assembly removal; removing wheel assemblies; inspecting wheel assemblies and fasteners; and fitting wheel assemblies.

Application of the Unit

This unit is applicable to all light and heavy wheeled vehicles and is appropriate for those working in operational, service and maintenance roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the removal and fitting of wheel assemblies 1.2. Obtain, interpret and clarify work requirement and safety information and procedures, in accordance with legislation and site procedures, before proceeding 1.3. Identify site risks and hazards, including equipment to be used 1.4. Set up maintenance schedules based on tyre usage, wear or condition in accordance with legislation, manufacturer and/or site procedures 1.5. Access and apply safety information and procedures throughout the operations
2. Prepare for work	2.1. Identify ***wheel and/or rim*** type, and mounting system 2.2. Prepare, clean and inspect ***wheel assemblies*** in accordance with ***legislation***, manufacturer and/or site procedures 2.3. Select and check ***tools*** are fit for purpose in accordance with manufacturer and/or site procedures
3. Assess risk in wheel assembly removal	3.1. Identify and control any ***hazardous conditions of the work environment*** before proceeding 3.2. Identify and control any ***hazardous conditions of the assembly*** before proceeding 3.3. Identify wheel by construction and mounting type 3.4. Access and interpret correct information from appropriate manufacturer specifications and site procedures 3.5. Identify when tyre(s) require deflation before removal from equipment
4. Remove wheel assembly	4.1. Plan sequence of work, noting points where safety checks are required 4.2. Identify and apply ***methods*** for raising and supporting equipment in accordance with

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	site procedures 4.3. Identify and apply methods for removing the wheel in accordance with site procedures 4.4. Identify and apply site procedure for transport and storage of wheel
5. Inspect wheel assemblies and fasteners	5.1. Access and apply site procedure for inspection of wheel assemblies and ***fasteners*** 5.2. Clean and visually inspect wheel assembly for damage, wear, corrosion foreign material, cracks, and compatibility of components 5.3. Clean and visually inspect mounting surfaces and fasteners for damage, wear, corrosion, foreign material and cracks 5.4. Check specifications and compare to conditions found 5.5. Report and action findings in accordance with site procedures 5.6. Discard unusable fasteners in accordance with manufacturers or site procedures
6. Fit wheel assembly	6.1. Access and interpret information from appropriate manufacturer specifications and site procedures 6.2. Identify and apply methods in accordance with site procedures for fitting the wheel 6.3. Ensure that tightening sequence, torque settings and inflation pressure are in accordance with manufacturer's specifications and site procedures 6.4. Check wheel assembly for correct fitment including alignment 6.5. Identify and apply methods for lowering equipment in accordance with site procedures 6.6. Re-torque as required in accordance with site procedures and manufacturer's specifications 6.7. Record ***data*** and all work performed in accordance with site procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to remove and fit wheel assemblies:

- apply legislative, organisation and site requirements and procedures
- apply risk assessment procedures
- apply enterprise procedures
- observe safety precautions
- access, interpret and apply technical information
- apply lift and support procedures for vehicles and/or machines
- apply wheel changing requirements and procedures including: removing and fitting wheel or rim
- apply tyre or tube deflating and inflating procedures
- apply tyre and wheel assembly handle procedures
- apply wheel assembly fastener tightening, torque and re-torque procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to remove and fit wheel assemblies:

- potential hazards and their identification
- safety precautions to be observed throughout the removal and fitting process
- rubber tyred equipment safety requirements
- types and classifications of wheels and rims
- soft ground support procedures and systems
- personal safety requirements
- process used in undoing wheel or rim fasteners
- process used in torque measurement when tightening wheel or rim fasteners
- process used to inflate and deflate tyres
- distinguish the difference between a rim and a wheel
- jacking and support procedures
- manual handling techniques
- identifying components for compatibility

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for removing and fitting of wheel assemblies • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the removing and fitting of wheel assemblies • working with others to undertake and complete the removal and fitting of wheel assemblies that meets all of the required outcomes • consistent timely completion of removing and fitting of wheel assemblies that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the removal and fitting of wheel assemblies

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Information may include:	• tagging out and immobilisation of equipment • jacking points • for specifications for torque settings and tightening sequences • inflation pressure
Wheels and **Rim** may include:	• rim or hub mounted split rim • safety lock rim • split rim, forklift or cranes • rim or hub mounted multi piece rim • one piece wheel/rim
Wheel assemblies	• tyre and rim • tyre and wheel mounted to a wheel
Tools may include:	• lifting equipment • hand tools, power tools • jacks and support stands • personal protective equipment (PPE)
Hazardous conditions of the working environment may include:	• changing ground conditions • dust • noise • weather • traffic interaction • personnel interaction
Hazardous conditions of the assembly may include:	• tyre defects • distortion • structural damage

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	• cuts and damage • potential internal fire/explosion • potential external fire/tyre burst • under inflated tyre • wheel and rim component defects • cracks • distortion • wear • corrosion • dislodged components • leakage • mechanical damage • valve gear • blocked valve • expired scheduled testing date
Methods should apply to the following conditions and may include:	• indoors or outdoors • level or uneven ground conditions • hard or soft ground conditions • workshop or mining area • surface or underground • wet or dry • night or day • standard or non standard heavy rims
Methods include:	• risk assessment procedures • personal safety aspects • raising and supporting vehicle safely • deflating and inflating tyres or tubes • removing and fitting wheel or rim • handling tyre and wheel assembly using the relevant equipment • tightening, torque and re-torque the assembly fasteners
Fasteners may include:	• wedges • nuts • bolts • washers • studs • cleats • wedge bands • spacer bands • reducers

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Data may include:	• site maintenance records • re-torque tags

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM211B Remove, repair and refit tyres and tubes

Modification History

Not applicable.

Unit Descriptor

This unit covers the removal, repair and refitting of tyres and tubes in resources and infrastructure industries. It includes; planning and preparing for work; the controlling of risk; removal of tyres and or tubes from wheel/rim assembly; inspection of wheel and rim assembly components prior to assembly; fitting of tyre and or tube to wheel and rim assembly; inflation; inspecting tyres, tubes, wheels and rims; and carrying out a minor tube and tyre repair

Application of the Unit

This unit is applicable to heavy wheeled vehicles and is appropriate for those working in operational, service and maintenance roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the removal, repair and refitting of tyres and tubes 1.2. Obtain, interpret and clarify ***work requirement and safety information and procedures***, in accordance with legislation and site procedures, before proceeding 1.3. Identify site and task hazards, and risks, including risk controls and equipment to be used 1.4. Set up maintenance schedules based on tyre usage, wear or condition in accordance with legislation, manufacturer and/or site procedures 1.5. Schedule work based on ***information*** provided
2. Prepare for work	2.1. Identify ***wheel assembly***, and type of mounting system 2.2. Prepare, clean and inspect wheel assembly for damage, wear, corrosion, foreign material, cracks, and compatibility of components in accordance with legislation, manufacturer and/or site procedures 2.3. Select and check ***tools and equipment*** are fit for purpose in accordance with manufacturer and/or site procedures
3. Control of risk	3.1. Access and interpret correct information from appropriate manufacturer specifications and site documentation 3.2. Control or report any ***hazardous conditions of the work environment*** before proceeding. Note points where safety checks are required 3.3. Control or report any ***hazardous conditions of the assembly*** before proceeding. Note points where safety checks are required 3.4. Control or report any ***task hazards*** before proceeding, for example use of a deflation cage or lifting device to prevent manual handling injury. Note points where safety checks are required

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	3.5. Ensure that tyre and or tube is fully deflated before proceeding with the task 3.6. This may include the identification and safe removal and purging of ***toxic fill substances*** according to OHS requirements and OEM specifications
4. Remove tyre and or tube from wheel/rim assembly	4.1. Identify ***methods*** for the removal of tyres and tubes in accordance with site procedures and OEM specifications. Access and interpret correct information from appropriate manufacturer specifications 4.2. Carry out removal in accordance with site procedures and OEM specifications 4.3. Clean and inspect ***wheel***/***rim*** assembly components and assign status of disposition 4.4. Complete appropriate workplace documentation relevant to removal outcomes
5. Inspect wheel/rim assembly components prior to assembly	5.1. Ensure selected wheel/rim assembly components are compatible and suitable for application per OEM requirements 5.2. Inspect the tyre for serviceability 5.3. Inspect the wheel/rim and associated parts for serviceability 5.4. Inspect the ***fastening systems*** for serviceability 5.5. Where applicable, inspect the vehicle hub for serviceability
6. Fit tyre and or tube to wheel/rim assembly	6.1. Identify methods for the fitment of tyres and tubes in accordance with site procedures and OEM specifications. Access and interpret correct information from appropriate manufacturer specifications 6.2. Where applicable, add tyre additive in accordance with site procedures and OEM specifications or recommendation 6.3. Carry out refitting/replacement according to site procedures and OEM specifications 6.4. Conduct integrity check of wheel assembly 6.5. Complete appropriate workplace documentation
7. Inflate assembly	7.1. Inflate assembly for storage or use in accordance with site procedures and OEM

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	specifications or recommendation 7.2. Complete and deal with appropriate ***workplace documentation***
8. Inspect, tyres, tubes and wheels/rims	8.1. Inspect tyres, tubes and wheels/rims for serviceability, and or repairability 8.2. Access and interpret correct information from appropriate manufacturer specifications 8.3. Carry out inspections and tests according to site and OEM requirements 8.4. Inspect tyres and tubes to identify those requiring minor repair 8.5. Complete appropriate workplace documentation relevant to inspection outcomes
9. Carry out a minor tube and tyre repair	9.1. Identify task hazards and risks, and apply risk controls and equipment to be used 9.2. Access and interpret correct information from appropriate manufacturer specifications 9.3. Carry out minor repair of tubes and tyres according to site procedures 9.4. Complete appropriate workplace documentation relevant to repair outcomes

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to remove, repair and refit tyres and tubes:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information
- use relevant tools and equipment safely
- apply manual handling procedures
- apply personal safety requirements
- apply repair tyre and/or tube procedures
- apply tyre and/or tube removal and replacement procedures
- apply tube and tyre reparability assessment procedures
- apply fill substance addition and removal procedures

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to remove, repair and refit tyres and tubes:

- types of tubes and tyres and their construction
- inspection procedures to determine repairability
- company position in relation to tyre repair
- roadworthiness requirements relating to tyres and rims
- tyre and tube removal and refitting/replacement procedures, including rim types
- tyre and tube repair procedures
- ballast identification, types and application
- tyre fill identification, types and application
- tyre fill adding/removal methods and procedures
- safety precautions related to handling of tyre fill substances
- equipment safety requirements
- relevant manufacturer/company policies
- legislation where applicable
- manual handling procedures
- personal safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for removing, fitting and repairing tyres and tubes on a site • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the removal, fitting and repair tyres and tubes on a site • working with others to undertake and complete the removal, fitting and repair of tyres and tubes that meets all of the required outcomes • consistent timely completion of removal, fitting and repair of tyres and tubes that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the removal, fitting and repair of tyres and tubes

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirement and safety information and procedures may include:	• safe work procedures • site procedures • OEM specifications and recommendations • data recording • materials safety data sheets (MSDS)
Information may include:	• enterprise operating procedures • industry/workplace code of practice • product manufacturer specifications • customer requirements • materials safety data sheets (MSDS) • statutory requirements • tagging information • specifications for torque settings and tightening sequences • inflation pressure • tyre additive and ballast volumes
Wheel assemblies may include:	• tyre and rim • tyre and wheel mounted to a wheel

Tools and equipment may include:	• hand tools, power tools
	• wheel assemble lifting equipment
	• specialised equipment such as:
	  • buffs
	  • spreaders
	  • tyre removal equipment
	  • immersion tanks

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	• lifting equipment • personal protective equipment

Hazardous conditions of the working environment may include:	• tyre defects:
	  • distortion
	  • structural damage
	  • cuts and damage
	  • potential internal fire/explosion
	  • potential external fire/tyre burst
	  • under inflated tyre
	• wheel and rim component defects:
	  • cracks
	  • distortion
	  • wear
	  • corrosion
	  • dislodged components
	  • leakage
	  • mechanical damage
	  • valve gear
	  • blocked valve
	• expired scheduled testing date

Task hazards may include:	• less than adequate housekeeping • selection of incorrect tooling • manual handling • use of tooling • working in and around other machinery • compressed air • chemicals • oversight • fatigue • plant defects
Toxic fill substances may include:	• nitrogen gas • polyurethane resin (PUR) tyre fill • tyre additive
Methods may include:	• visual inspection • use of specific hand tools and equipment • types of tubes and tyres • various repair methods/material • ballast requirements • tyre fill substances
Methods should apply to the	• indoors or outdoors

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following conditions and may include:	• level or uneven ground conditions • hard or soft ground conditions • workshop or mining area • surface or underground • wet or dry • night or day • standard or non standard heavy rims
Wheels/**rims** may include:	• safety lock rim • split 'industrial' rim (forklift or cranes) • rim or hub mounted multi piece rim • one piece wheel/rim
Fastening systems may include:	• wedges • nuts • bolts • washers • studs • cleats • wedge bands • spacer bands • reducers
Workplace documentation related to inflation may include records of:	• inflation pressure • gas used • ballast added

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM212A Service mine plant and equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the servicing of plants and equipment in resources and infrastructure industries. It includes plan and prepare for servicing and service plant and equipment.

Application of the Unit

This unit covers the requirements for undertaking scheduled servicing of plant and equipment those in operator, serviceman and trade support personnel roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for servicing	1.1. Access, interpret and apply ***compliance documentation*** relevant to the servicing of plants and equipment 1.2. Receive, interpret and clarify ***shift servicing requirements*** 1.3. Access and apply safety information and procedures throughout the work 1.4. Conduct pre-start checks on the ***service vehicle*** in accordance with manufacturer and /or site procedures 1.5. Check and top up service vehicle levels of fuel, lubricants and water as required in the service plan 1.6. Maintain the ***service bay***/***equipment*** 1.7. Identify ***replacement parts and service tools*** from the servicing schedule and obtain them from the appropriate stores area
2. Service plant and equipment	2.1. Coordinate and liaise to arrange details of preparatory activities, timing and location of servicing 2.2. Carry out start-up, park-up and shut-down procedures on service vehicle in accordance with manufacturer and/or ***site specific requirements*** 2.3. Operate service vehicle in accordance with manufacturer and/or site requirements 2.4. Carry out servicing of plant and equipment in accordance with the service schedule, manufacturer specifications and site requirements. 2.5. Dispose of used oils and lubricants in accordance with environmental regulations and site requirements 2.6. Maintain completed servicing schedule and/or records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to service plant and equipment:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- read, interpret and apply technical information
- apply diagnostic techniques
- use relevant hand tools
- apply oil sampling procedures
- apply environmental constraints in service operations
- apply equipment records maintenance procedure
- apply environmentally sensitive fluids and materials disposal procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to service plant and equipment:

- site and equipment safety requirements
- isolation and tag-out procedures
- emergency fire procedures
- equipment characteristics, technical capabilities and limitations
- fuel and lubricant applications and specifications
- filter applications and specifications
- additives applications and specifications
- hazardous chemical (Hazchem) systems
- hazard identification and response procedures
- site environmental requirements and constraints related to servicing

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for servicing of plants and equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the servicing of plants and equipment • working with others to undertake and complete the servicing of plants and equipment that meets all of the required outcomes • consistent timely completion of the servicing of plants and equipment that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the servicing of plants and equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Shift servicing requirements may include:	• number and type of plant and equipment to be serviced • description of servicing required • specific servicing priorities and achievement targets • location of plant and equipment • site lighting arrangements • hazards and potential hazards • coordination details
Service vehicle may be:	• any vehicle that is designed or modified to carry and operate service equipment
Service bay/equipment requirements may include:	• clearing and cleaning access ways • monitoring and maintaining fuel and lubricant levels • checking and maintaining service bay/equipment • applying authorised sampling procedures
Replacement parts and servicing tools may include:	• compressors • filter • 'O' rings • gaskets • jump start equipment • compressed air start equipment • tools • fire fighting equipment • waste disposal equipment

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	• records • cleaning agents
Site specific requirements may include:	• isolation of plant/equipment • creation and maintenance of a safe work environment • the handling of hazardous chemicals and substances • tagging procedures

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM213A Position and set up mobile lighting

Modification History

Not applicable.

Unit Descriptor

This unit covers the positioning and setting up of mobile lighting in resources and infrastructure industries. It includes: preparing for mobile lighting; and positioning and activating lighting.

Application of the Unit

This unit is appropriate for those working in operational or maintenance roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for mobile lighting	1.1. Access, interpret and apply ***compliance documentation*** relevant to the positioning and setting up of mobile lighting 1.2. Receive, interpret and clarify shift changeover details 1.3. Select appropriate type of equipment and/or attachments according to job specifications and to maximise efficiency and effectiveness of work activities 1.4. Identify, address and report ***potential hazards and risks*** 1.5. Select personal protective equipment appropriate for work activities 1.6. Conduct equipment pre-start checks to ensure equipment is ready for operation 1.7. Secure all equipment in preparation for towing in accordance with site procedures 1.8. Identify, address and report ***environmental issues*** 1.9. Communicate with other personnel using approved communication methods 1.10. Adhere to emergency procedures to ensure safety of personnel, plant and equipment
2. Position and activate lighting	2.1. Isolate area using ***physical barricades*** and ***signage*** 2.2. Position lighting to suit work activities and ***site conditions*** 2.3. Test lights according to schedule, to include start-up and shutdown procedures 2.4. Activate lights according to schedule 2.5. Enhance visibility of site according to the position of the lighting 2.6. Reassess risk to ensure enhanced illumination does not adversely affect safety of persons in the area

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to position and set up mobile lighting:

- apply legislative, organisation and site requirements and procedures
- apply diagnostic techniques
- apply hazard identification procedures
- apply record maintenance requirements
- organise work tasks
- apply defect reporting procedures
- apply safe work practices
- work in a team

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to position and set up mobile lighting:

- construction procedures
- emergency procedures
- environmental and heritage procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- hazardous goods procedures and consequences of spills
- isolation procedures
- lighting safety issues
- operational procedures and checks
- shutdown procedures
- start-up procedures
- towing procedures
- water and electricity hazards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the positioning and setting up of mobile lighting • implementation of requirements, procedures and techniques for the safe, effective and efficient positioning and setting up mobile lighting • working with others to position and set up of mobile lighting that meets all of the required outcomes • consistent timely positioning and setting up of mobile lighting that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to position and set up of mobile lighting

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Potential hazards and risks may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) water, traffic • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground • unstable faces • vehicles
Environmental issues may include:	• culturally-sensitive sights and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills

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	• water quality
Physical barricades may include:	• flagged fencing • windrow (bund) • wire fence
Signage may include:	• safety • type of site • access requirements • speed
Site conditions may include:	• broken ground • day and night • degree of compaction • location of water table • slope of working surface • stable ground (compaction) amount of scale • wet and dry • working over old underground workings and voids

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM214A Provide support to electrical tradesperson

Modification History

Not applicable.

Unit Descriptor

This unit covers providing support to electrical tradesperson in the coal mining industry. It includes: planning and preparing for support; supporting the tradesperson; and applying emergency procedures

Application of the Unit

This unit is appropriate for those working in operational or maintenance roles, at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for support	1.1. Access, interpret and apply ***compliance documentation*** relevant to the providing of support to electrical tradespersons 1.2. Receive and clarify ***details of support required*** from tradesperson 1.3. Access and apply safety information and procedures throughout the work 1.4. Analyse ***work requirement*** and complete immediate planning / organising 1.5. Identify and select commonly used parts / stores according to work requirements 1.6. Pack, load and transport parts/stores and ***equipment*** to worksite in accordance with work plan
2. Support tradesperson	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out ***support tasks*** in accordance with the tradesperson's directions
3. Apply emergency procedures	3.1. Apply emergency isolation and shut-down procedures in accordance with site procedures 3.2. Notify emergency in accordance with site procedures 3.3. Apply emergency first-aid appropriate to the situation in accordance with site procedures 3.4. Provide information/reports required by site emergency procedures to appropriate authorities

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to provide support to electrical tradesperson:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply procedures for work at heights
- identify electrical system components
- identify electrical spares
- apply operational maintenance diagnostic techniques
- use relevant hand tools
- apply equipment records maintenance requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to provide support to electrical tradesperson:

- site and equipment safety procedures
- site operational and maintenance procedures
- basic electrical componentry
- switching (for emergency purposes)
- earthing
- hazard identification and response procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for providing support to electrical tradespersons • implementation of requirements, procedures and techniques for the safe, effective and efficient provision of support to electrical tradespersons • working with others to provide support to electrical tradespersons that meets all of the required outcomes • consistent timely provision of support to electrical tradespersons that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to provide support to electrical tradespersons

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Details of support required may include:	• nature and scope of work • locations, timings • equipment/plant to be used (including any defects) • system being worked on • specific safety requirements • hazards and potential hazards • coordination requirements/issues
Work requirements may be in the form of:	• shift briefings • handover details, and/or • work orders • safe working procedures (or equivalent)
Equipment may include:	• ladders • safety equipment • hazardous chemicals • oxyacetylene • air compressors • others as designated at sites
Support tasks may include:	• tagging emergency HV switching • operation/re-setting circuit-breakers • greasing motors and jointing cables

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Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM215A Carry out drilling industry operational maintenance

Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of operational maintenance in the drilling industry. It includes: planning and preparing for maintenance tasks; carrying out pre-drilling checks and maintenance; performing machine checks; maintaining all down-hole tools and other drilling consumables; performing machinery maintenance; and performing field repairs.

Application of the Unit

This unit is appropriate for those working in a drillers assistant and driller roles, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for maintenance tasks	1.1. Access, interpret and apply ***compliance documentation*** relevant to the carrying out of operational maintenance in the drilling industry 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities 1.5. Select and use appropriate personal protective equipment
2. Carry out pre-drilling checks and maintenance	2.1. Carry out checks on drill 2.2. Complete mine site/company checklist sheet 2.3. Lubricate all systems where necessary 2.4. Top up fluid levels and bleed where necessary 2.5. Check filters and clean/replace if necessary 2.6. Check security of all circulation systems, as required 2.7. Keep cabin, seat belts and windscreen clean and windscreen washer functioning
3. Perform machine checks	3.1. Carry out timed and regular equipment inspection, servicing and lubrication in accordance with manufacturer's recommendations/company procedures and record details 3.2. Identify faults or potential faults and report immediately 3.3. Observe isolation/tag out/lock out procedures 3.4. Identify, record and/or report requirement for repair or maintenance and critical time line for rectification 3.5. Monitor effectiveness of maintenance performed
4. Maintain all down hole tools and other drilling consumables	4.1. Carry out component maintenance safely and according to procedures and

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	instructions 4.2. Maintain and store tools and consumables according to site procedures
5. Perform machinery maintenance	5.1. Minimise equipment breakdown by regular servicing and maintenance and performance of overhauls to manufacturer's specifications 5.2. Use tag out/lock out when servicing 5.3. Carry out minor servicing of equipment avoiding disruption to production 5.4. Carry out routine inspection, servicing, lubrication and housekeeping tasks to manufacturer's and/or site requirements 5.5. Read and follow instructions on maintenance procedures, lubrication tasks, filter change/service accurately 5.6. Identify and change wear parts, and record relative frequency of replacement 5.7. Use ***diagnostic and troubleshooting techniques*** and take action 5.8. Identify operational faults in and maintain hydraulic systems 5.9. ***Report*** service and repair requirements and take action according to company procedures
6. Perform field repairs	6.1. Isolate and rectify equipment faults 6.2. Identify extent of repair needed and obtain spare parts 6.3. Identify, select and use tools required for maintenance and repairs correctly 6.4. Return re-usable components or accessories in accordance with site requirements 6.5. Review equipment and re-set in response to variations in production needs 6.6. Recognise system faults and formulate appropriate responses within agreed time lines 6.7. Maintain records of action taken in accordance with site requirements 6.8. Dismantle, assess, service, repair, reassemble and test a given drill component in a safe manner

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to carry out operational maintenance in the drilling industry:

- apply legislative, organisation and site requirements and procedures
- apply in service functions and procedures
- apply hazard identification procedures
- apply risk control procedures
- apply Job Safety Analysis (JSA)
- apply hazardous goods handling techniques
- apply tag out/lock out procedures
- apply defects reporting procedures
- apply safe work practices
- use hand and power tools
- apply communication and recording skills
- apply manual and mechanical handling techniques
- apply basic maintenance skills

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to carry out operational maintenance in the drilling industry:

- manufacturer's maintenance requirements and procedures
- characteristics, technical capabilities and limitations of equipment
- environmental requirements
- mechanical/electrical/hydraulic systems and power tools characteristics
- isolation and tag out procedures
- lubricants and their uses
- all engine electric and hydraulic indicators and gauges
- transmission and drive systems
- recording and reporting requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for carrying out of operational maintenance in the drilling industry • implementation of requirements, procedures and techniques for the safe, effective and efficient carrying out of operational maintenance in the drilling industry • working with others to undertake and complete operational maintenance in the drilling industry that meets all of the required outcomes • consistent timely completion of operational maintenance in the drilling industry that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete operational maintenance in the drilling industry

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achievement targets • operational conditions • obtaining of permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• spread of contaminants as a result of maintenance activities • working in proximity to drilling rig and other equipment • high pressure air and hydraulic • rotating components
Coordination requirements may include	• driller • other equipment operators • maintenance personnel

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	• supervisors • mine personnel
Personal protective equipment includes:	• steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Checks may include:	• regular visual inspection including pre-start neutral for all control levers • check on correct operation • observation of display instruments and gauges function • observation of recording instruments and gauges • hydraulic system (including filters, strainers, hose, hose fitting and oils) • air systems and filters • vehicles (including wheels, tyres, clutch, brakes and fluid levels) • batteries
Faults may be indicated by:	• indications on instruments or gauges • noises • vibrations • smells • overheated hydraulic motors or lines • visual indicators (e.g. smoke)
Maintenance and storage of tools and consumables may include:	• effective storage • use of desiccants • store chemicals (cement, bentonite, and so on) in safe dry conditions secure from livestock
Consumables may include:	• oils - engine, gear box, hydraulic • greases • rig spare parts • down hole tools spare parts
Machinery **maintenance** may include:	• operating checks • daily checks • programmed maintenance • breakdown maintenance • prescribed lubrication
Diagnostic and trouble shooting techniques may include:	• diagnostics built into equipment • diagnostics applying externally • troubleshooting procedures recommended by

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	manufacturers • troubleshooting procedures developed by organisation • knowledge of sources of help for more complex problems
Reporting requirements may include:	• tool records • service and maintenance • metres drilled • operating hours since last service

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM301A Test operational functions of vehicles and equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the testing of operational functions for vehicles and equipment in the coal and metalliferous mining industries. It includes: planning and preparing for testing, testing vehicles and equipment; and completing the testing sequence

Application of the Unit

This unit is appropriate for those working in operational or maintenance roles, at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for testing	1.1. Access, interpret and apply ***compliance documentation*** relevant to testing of operational functions for vehicles and equipment 1.2. Obtain, interpret and clarify work requirements before proceeding 1.3. Access, interpret and apply geological and survey data required to complete the allocated work 1.4. Identify and confirm ***testing requirements*** 1.5. Identify and obtain ***resources*** required for the work 1.6. ***Prepare vehicle*** to be worked on for the test 1.7. Coordinate activities with others at the site prior to commencement of, and during, the work activity
2. Test vehicles and equipment	2.1. Carry out pre-start, start-up, shut-down and isolation procedures 2.2. Test operational functions of the vehicle 2.3. Move/relocate vehicle for testing purposes 2.4. Identify and rectify faults where possible, or arrange for corrective action 2.5. Act on or report monitoring systems warnings and alarms 2.6. Recognise and respond to hazardous and emergency situations
3. Complete the testing sequence	3.1. Clean, maintain and store ***equipment*** and tools 3.2. Restore worksite 3.3. Complete records and documents

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to test operational functions of vehicles and equipment:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information and drawings
- apply site safety procedures
- use hand and power tools
- carry out precision measurement
- access and use site inventory system
- identify and diagnose faults
- operate vehicles/equipment for test purposes
- interpret test results

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to test operational functions of vehicles and equipment:

- occupational health and safety requirements
- mine operational rules and procedures
- operations, characteristics, capabilities and limitations of mine vehicles and equipment
- diagnosis and fault finding techniques
- site equipment and maintenance documentation and procedures
- site inventory (parts) systems
- testing procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for testing the operational functions of vehicles and equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient testing of the operational functions of vehicles and equipment • working with others to test the operational functions of vehicles and equipment that meets all of the required outcomes • consistent timely completion of testing of operational functions of vehicles and equipment that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to test the operational functions of vehicles and equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Testing requirements may be identified through:	• work orders or requests • condition statements • maintenance schedules • initial diagnosis • manufacturer specifications
Resources may include:	• appropriate technical manuals • information materials • tools
Preparing vehicles may include:	• locating • positioning • isolating • cleaning • checking for and removing hazardous materials/explosives
Vehicles may include	• all machines involved in production/support roles at the mine site
Testing operational functions may include:	• steering • brakes • lights • exhaust emissions • pneumatics • hydraulics • raw gas sampling • production functionality in production mode • movement

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	• warning devices • gas monitoring devices
Equipment may include, but is not limited to:	• gas sampling equipment • hydraulic and pneumatic testing equipment

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM302A Service and handover plant and machines

Modification History

Not applicable.

Unit Descriptor

This unit covers the servicing and hand over of plant and machines in the coal and metalliferous mining and extractive industries. It includes: planning and preparing for servicing and maintenance; assessing and secure plant and machinery; servicing, maintaining and repairing plant and machines; testing the operational functions under load; and shutting down equipment and securing the site.

Application of the Unit

This unit is appropriate for those working in operational and maintenance roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for servicing and maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to the servicing and hand over of ***plant and machines*** 1.2. Receive, interpret and clarify ***work requirements*** 1.3. Obtain permits required to carry out work from authorised personnel 1.4. Identify replacement parts and service tools from the servicing schedule and obtain them from the appropriate stores area 1.5. Inspect work area to identify ***hazards*** and select and implement appropriate prevention/control measures for the hazards identified 1.6. ***Safeguard*** (protect) site and non-site personnel, applying the principles of the hierarchy of prevention/control 1.7. Inspect working area to determine appropriate path of movement for loads and equipment/vehicles 1.8. ***Maintaintheservice bay***
2. Assess and secure plant or machine	2.1. Conduct ***external checks*** of machine in accordance with manufacturers' specifications (or equivalent) and site requirements 2.2. Inspect ***attachments*** for defects and to ensure security 2.3. Carry ***out pre-operational and post start-up equipment checks*** 2.4. Report defects and damage
3. Service, maintain and repair plant and machines	3.1. Effect coordination and liaison to arrange details of preparatory activities, timing and location of servicing 3.2. Operate service/maintenance equipment 3.3. Carry out servicing or maintenance of plant/machine in accordance with the service schedule, current manufacturer's specifications and site requirements 3.4. Dispose of used oil and lubricant in accordance with environmental regulations

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	and worksite rules 3.5. Maintain completed servicing schedule and/or records
4. Test operational functions under load	4.1. ***Drive the machine to and in the work area*** ensuring safety of personnel and avoidance of damage to plant/machine and environment 4.2. Shift material using appropriate equipment 4.3. Assess weight of test load to ensure compliance with equipment load plate specifications 4.4. Apply control levers to ensure ***safe and effective operation of equipment*** 4.5. Maintain speeds of machine to safe operating limits and site requirements 4.6. Correctly give and interpret communications with co-workers and other relevant persons 4.7. Place test load to ensure stability of materials and the avoidance of hazards 4.8. Carry out emergency procedures minimising risk to personnel
5. Shutdown equipment and secure site	5.1. ***Park machine*** to avoid machine and site hazards 5.2. Conduct shut-down and isolate vehicle 5.3. Complete ***post-operational checks***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to service and hand over mine plant and machines:

- apply legislative, organisation and site requirements and procedures
- apply attachments securing procedures
- apply hazard identification procedures
- apply hierarchy of risk controls
- select appropriate equipment for task
- apply lever controls safely and effectively
- interpret communication
- apply service equipment operating procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to service and hand over mine plant and machines:

- manufacturer's or equivalent specifications for conduct of external checks
- manufacturer's specification for securing attachments
- procedures for identifying hazards
- procedures for identifying hazard/risk control measures
- the hierarchy of risk control measures
- safeguards for ensuring personnel safety and protection
- requirements for appropriate path for movement for loads and equipment/vehicles
- permits required to carry out work
- manufacturer's specifications/operational manual requirements for pre-operational and post start-up checks
- site communication signals
- site procedures for reporting defects
- safe operating limits of hydraulic shovel/excavator
- site safe operating speed limits
- test load parameters
- requirements for stability of materials
- emergency procedures
- potential parking hazards
- manufacturer's specifications for shutdown and isolation of hydraulic

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shovel/excavator

- site post-operational check requirements
- replacement parts and service tools and their source
- manufacturer's and/or site requirements for operating service equipment
- manufacturer's specifications and site servicing schedule requirements for plant and equipment
- environmental regulations and site rules for disposal of used oil and lubricant
- site requirements for the maintenance and completion of servicing schedule and/or records

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for servicing and handing over plant and machines • implementation of requirements, procedures and techniques for the safe, effective and efficient servicing and handing over plant and machines • working with others to service and hand over plant and machines and meets all of the required outcomes • consistent timely completion of servicing and handing over of plant and machines that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to service and hand over plant and machines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Plant and machines may include:	• dozer • scraper • excavator • front-end loader • hydraulic shovel • haul truck
Work requirements may include:	• number and type of plant and equipment items to be serviced • details of servicing required • specific servicing priorities and achievement targets • location of plant and equipment • site lighting arrangements • hazards and potential hazards • site occupational health, safety and environmental practices and requirements • appropriate equipment for task • coordination details
Hazards may include:	• uneven/unstable terrain • power lines • electrical • dust • noise • trees • overhead service lines • bridges

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	• surrounding buildings • obstructions • structures • facilities • other equipment in the area • dangerous materials • underground services • recently filled trenches
Safeguards may include the selection of appropriate equipment to ensure personnel safety and protection, such as:	• the erection of barricades • posting signs
Service bay maintenance requirements may include:	• clearing and cleaning access ways • monitoring and maintaining fuel and lubricant levels • checking and maintaining service bay equipment • applying authorised sampling procedures
External checks may include:	• walk around machine • underneath machine for water or oil leaks • tyre condition and pressure • grease fittings and grease pins • fuel level • transmission oil • engine oil • brake fluid • power steering • battery security, water level and cleanliness • coolant • air tank drained • air pre-cleaner • air filter indicator
Attachments are:	• to be installed and operated in accordance with manufacturer's specifications
Pre-operational and post start-up equipment checks may include ensuring:	• hazard warning systems, for example lights and horns are functional • attachment movements and control functions are smooth and complying with operating requirements • start-up conforming with manufacturer's specifications/operations manual • the communications signals to be used

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Driving the machine to and in the work area may include:	• selecting correct controls • raising attachments smoothly • ensuring travel direction is clear of personnel and obstacles • selecting appropriate route • travelling at a safe speed • carrying bucket at safe travelling height and crowded back • the test load is the approved load designated for testing purposes under legislation
Safe and effective operation of equipment may include ensuring that:	• the force applied to shift load is appropriate to bulk of material • the path of movement is monitored for obstacles and hazards • hazard prevention control measures are selected and applied to ensure safe movement of load
Parking of plant/machinery may include ensuring that:	• vehicle/equipment safety locks are in place • implements/attachments are rendered safe • access ways are clear • equipment/vehicle is away from overhangs/fuelling site • excavations are fenced off and made secure • securing against unauthorised movement
Post-operation checks may include:	• minor service requirements • defects and damage reports

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM303A Shut down dredge for operator maintenance

Modification History

Not applicable.

Unit Descriptor

This unit covers shutting down of dredges for operator maintenance in the resources and infrastructure industries. It includes: taking dredge off feed; moving boat lines; checking the ladder; conducting operational maintenance and housekeeping activities

Application of the Unit

This unit is appropriate for those working in operational or maintenance roles, at worksites within:

- Civil Construction
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Take dredge off feed	1.1. Access, interpret and apply ***compliance documentation*** relevant to the shutting down of dredges for operator maintenance 1.2. Raise and safely secure ladder above water 1.3. Conduct retreat away from working face to safe location to avoid brunt of possible ***face fall*** 1.4. Flush out ***plant*** 1.5. Adjust ***spuds*** and/or cable lengths to ensure dredge remains level on pond
2. Move boat line	2.1. Disconnect main power supply to dredge and ***plant*** 2.2. Move float line to new position ensuring enough slack is available for move
3. Check ladder	3.1. Confirm ladder is above water and safely secured 3.2. ***Check ladder*** at scheduled time to minimise downtime according to operational ***plant*** requirements 3.3. Inspect swing sheave action to assess ladder swing performance 3.4. Inspect ***cutter*** components and flush flow 3.5. Maintain communication with dredge operator and maintenance personnel using approved communication methods
4. Conduct operational maintenance	4.1. ***Visually inspect*** dredge to identify faults 4.2. Conduct routine operational servicing to ensure peak performance of dredge 4.3. Repair or refer faults to relevant personnel for action
5. Conduct housekeeping activities	5.1. **Clean** equipment 5.2. Clean and store attachments and equipment 5.3. Complete all required records and documentation accurately and promptly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to shutdown dredge for operator maintenance:

- apply legislative, organisation and site requirements and procedures
- apply diagnostic techniques
- apply decision making processes
- direct operations
- apply hazard identification procedures
- handle hazardous goods
- interpret ground conditions
- interpret documents, plans, reports, maps, specifications
- apply record maintenance requirements
- apply operational monitoring
- organise work tasks
- apply defect reporting requirements
- employ safe work practices
- select and fit personal protective equipment
- work in a team
- apply troubleshooting techniques
- use communications equipment
- use computer systems

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to shutdown dredge for operator maintenance:

- anchoring procedures
- anchor move procedures
- dredge preparation procedures
- dredging clean-up procedures
- emergency procedures
- environmental and heritage procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- hazardous goods procedures and consequences of spills

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- indicator readings
- isolation procedures
- ladder swing capability and limitations
- ladder maintenance procedures
- site operational system
- monitoring procedures
- night and day working procedures
- OHS procedures
- open cut procedures - dredging
- operational procedures and checks
- shutdown procedures
- site procedures
- site safety requirements
- sounding procedures
- float line movement procedures
- start-up procedures
- centre-line procedures
- dredge manoeuvring procedures
- plant move procedures
- retreat procedures
- side-line cable replacement procedures
- working face dangers

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for shutting down dredges for operator maintenance • implementation of requirements, procedures and techniques for the safe, effective and efficient shutting down of dredges for operator maintenance • working with others to shutdown dredges for operator maintenance that meets all of the required outcomes • consistent timely completion of shutting down dredges for operator maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to shutdown dredges for operator maintenance

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Face fall may include:	• collapse on top of dredge • on side or at rear
Plant (processor) requirements may include:	• amount of tonnes • feed requirements • flush out requirements
Spuds may include:	• auxiliary spud (rear of pontoon) • caterpillar hoses • main spud • spud • spud carriage winch • working spud carriage
Adjustments to **spuds** may include:	• spud lifts and drops (varying degrees)
Ladder checks may include:	• automatic lubricator • barrel • cutlass bearing • cutter • deck hose used in emergency • dredge main pump • gland water • hydraulic oil lines • ladder angle indicating pendulum transmitter • ladder angle striker and sensor limit switches • ladder winch sheaves • mining hose

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	• port and starboard carrier sheaves • port and starboard swing sheaves • purge jets • shaft and gearbox • stand-by valve • vacuum relief valve
Cutter components may include:	• cutter teeth • cutlass bearing
Visual inspection may include:	• anchors • cables • centre line indicators • decks • float line • ladder • spuds and carriages
Cleaning methods may include:	• degreasing • forced air • steam cleaning • vacuum • water

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM304A Install, commission and maintain major conveyor equipment and systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation, commissioning and maintenance of major conveyor equipment and systems in the coal mining industry. It includes: planning and preparing for work; installing conveyor equipment; commissioning conveyor systems; carrying out operator maintenance.

Application of the Unit

This unit is appropriate for those working in operational roles, in surface and underground sites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the installation, commissioning and maintenance of major conveyor equipment and systems 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Access, interpret and apply geological and survey data required to complete the allocated work 1.4. Obtain, transport and prepare materials and resources required for the work
2. Install conveyor equipment	2.1. Coordinate activities with others at the site prior to commencement of, and during, the work activity 2.2. Apply and monitor ***isolation and tag out*** procedures to establish and maintain a safe work environment throughout the job 2.3. ***Install*** conveyor ***equipment*** and systems 2.4. Recognise and respond to hazardous and emergency situations 2.5. Perform work in accordance with agreed plan and outcomes and within the operating capacities of the allocated equipment
3. Commission conveyor systems	3.1. Carry out inspection of ***conveyors*** and ***belts*** and ***auxiliary componentry*** to ensure compliance with relevant technical specifications 3.2. Carry out start-up and shut-down procedures 3.3. Test and test run equipment to ensure compliance with manufacturer instructions and site procedures
4. Carry out operator maintenance	4.1. Carry out conveyor equipment inspections and fault finding 4.2. Carry out routine ***operational maintenance***, servicing, lubrication and housekeeping tasks 4.3. Carry out minor ***maintenance*** to manufacturer's instructions and site requirements

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	4.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site requirements 4.5. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to installation, commissioning and maintenance of major conveyor equipment and systems:

- apply legislative, organisation and site requirements and procedures
- apply operational safety procedures
- access, interpret and apply technical and safety information
- interpret and apply survey information and plans
- apply plant and machinery operating procedures
- communicate and coordinate activities with others
- apply equipment records maintenance requirements
- apply diagnostic / fault finding techniques
- use hand tools
- apply environmental compliance requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to installation, commissioning and maintenance of major conveyor equipment and systems:

- operational safety procedures
- mine operational procedures related to conveyors
- mine communication procedures
- conveyor equipment characteristics, uses and limitations
- conveyor equipment installation procedures
- site mechanical / technical maintenance systems and procedures
- relevant geological and survey information
- equipment maintenance / lubrication requirements
- site environmental requirements and constraints related to conveyor systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installation, commissioning and maintenance of major conveyor equipment and systems • implementation of requirements, procedures and techniques for the safe, effective and efficient installation, commissioning and maintenance of major conveyor equipment and systems • working with others to install, commission and maintain major conveyor equipment and systems and meet all of the required outcomes • consistent timely completion of installation, commissioning and maintenance of major conveyor equipment and systems that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to install, commission and maintain major conveyor equipment and systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders • safe working procedures (or equivalent)
Work requirements may include:	• nature and scope of tasks • sequencing • equipment / plant allocation, including any defects • locations and essential survey data • working conditions • geological data • ventilation systems information • hazards and potential hazards • coordination requirements / issues
Specific **safe** requirements are to include:	• isolation of existing systems and services • observance of safety tagging procedures • restoration after isolation
Installation may include:	• fixing on concrete slab • dirt floor • between floor and roof • suspended from roof • disassembly prior to installation to allow transportation of components to assembly location
Equipment may include:	• chain blocks

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	• airbags
	• bolters
	• borers
	• drills and bits
	• hand tools
	• levelling equipment
	• pulley blocks
	• cables and chains
	• lifting equipment, which may include:
	  • mobile cranes
	  • gantry cranes
	  • truck mounted hoist
	  • forklifts
	  • general rigging equipment

Conveyors may include:	• belt • chain • roller link • cable belt

Belts may be:	• cable
	• steel core
	• canvas woven
	• rubber
	• PVC which may be:
	  • clipped
	  • hot spliced
	  • cold spliced joined

Auxiliary componentry may include:	• drive heads, which may include:
	  • multi-roller
	  • motorised pulley
	  • pneumatic fluid drives
	• belt starter
	• guarding items
	• loop take-ups
	• weight towers
	• transfer points
	• surge bins
	• clamping stations
	• mobile stacker
	• magnets

Operator (**operational**)	• those established and authorised for the site

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maintenance procedures are:	
Maintenance may include Installation and repair of:	• skirts • scrapers • snubber drums • weighers • tracking • tensioning equipment • pulley lagging

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM305A Repair and splice conveyor belting

Modification History

Not applicable.

Unit Descriptor

This unit covers repairing and splicing conveyor belting in the coal and metalliferous mining and extractive industries. It includes: planning and preparing for work; carrying out splicing operations; returning conveyors to service; and completing the work sequence.

Application of the Unit

This unit is appropriate for those working in operational or maintenance roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work	1.1. Access, interpret and apply ***compliance documentation*** relevant to the repairing and splicing conveyor belting 1.2. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.3. Access, interpret and apply geological and survey data required to complete the allocated work 1.4. Identify and obtain resources, including appropriate technical manuals and information, ***equipment***, materials and ***tools*** required for the work 1.5. Locate, position, make safe and clean the ***belting*** in preparation for work 1.6. Coordinate activities with others at the site prior to commencement of, and during, the work activity
2. Carry out splicing operations	2.1. Select tools and equipment appropriate to the tasks and correctly use and apply throughout the task 2.2. Complete ***splicing*** operation or belt ***repairs*** without damage to adjacent structures or equipment
3. Return conveyor to service	3.1. Carry out inspection of conveyor and auxiliary equipment to ensure compliance with relevant technical specifications 3.2. Test and test run conveyor belting to ensure compliance with manufacturer/site procedures 3.3. Return conveyor to service
4. Complete the work sequence	4.1. Clean, service and store equipment and tools 4.2. Restore worksite 4.3. Complete records and documents

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to repair and splice conveyor belting:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information
- apply site safety procedures
- use hand and power tools
- use marking out techniques
- sharpen knives
- operate pulling and lifting equipment
- dispose of environmentally sensitive oils, fluids and materials

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to repair and splice conveyor belting:

- legislative and site operation safety requirements and procedures
- site operational rules and procedures
- operations, characteristics, capabilities and limitations of vulcanising presses
- specialised cutting tools and conveyor belt types
- slinging and lifting procedures and related safety requirements
- hazardous chemicals
- site equipment and maintenance documentation and procedures
- site inventory (parts) systems
- marking out procedures
- site environmental requirements and constraints related to conveyor belting

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for repairing and splicing conveyor belting • implementation of requirements, procedures and techniques for the safe, effective and efficient repairing and splicing of conveyor belting • working with others to repair and splice conveyor belting that meets all of the required outcomes • consistent timely repair and splicing of conveyor belting that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to repair and splice conveyor belting

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders • safe working procedures (or equivalent) • type of belt to be repaired/spliced • method of repair/splice • location of work and hazards • work environment

Equipment may include:	• cutting
	• sanding
	• clamping
	• pulling
	• lifting
	• vulcanising equipment
	• lifting equipment, which may include:
	  • mobile cranes
	  • gantry cranes
	  • truck mounted hoist
	  • forklifts
	  • general rigging equipment

Tools may include:	• hand tools • air and power tools • pulling gear
Belts may include:	• steel cord • PVC

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	• fabric • composite carcass
Splices may include:	• both cold and hot vulcanising • mechanical splices/clips/joints
Repairs may include:	• edge repairs • lateral and longitudinal splits • inlays

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM306A Service and maintain conveyors, feeders and hoppers

Modification History

Not applicable.

Unit Descriptor

This unit covers servicing and maintenance of conveyors, feeders and hoppers in the coal and metalliferous mining and extractive industries. It includes: preparing for and carrying out of servicing and maintenance; and the recording and reporting on the servicing and maintenance undertaken

Application of the Unit

This unit is appropriate for those working in operational or maintenance roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service and maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to the ***servicing*** and ***maintenance*** of conveyors, feeders and hoppers 1.2. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of the tasks 1.3. Identify and obtain ***items*** required for the safe, effective and efficient conduct of the tasks 1.4. Identify and obtain ***tools*** required for the safe, effective and efficient completion of the tasks 1.5. Identify and arrange ***support*** required for the safe, effective and efficient completion of the tasks 1.6. ***Inspect and prepare work area*** in ***coordination with others*** 1.7. Carry out isolation and lock-out of all equipment necessary for the safe execution of tasks
2. Carry out service and repairs	2.1. Resolve coordination requirements with others at the site prior to commencing and during work activities 2.2. Carry out inspection of conveyors, feeders and hoppers, fault find and report outcomes to appropriate person 2.3. Select and use servicing and maintenance tools in a safe, effective and efficient manner 2.4. Select and operate servicing and maintenance items safely, effectively and efficiently 2.5. Carry out safe effective and efficient servicing of conveyors, feeders and hoppers in accordance with the work requirements 2.6. Carry out the safe, effective and efficient maintenance of conveyors, feeders and hoppers in accordance with the work requirements 2.7. Recognise and respond to ***hazardous and***

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	emergency situations in accordance with site requirements 2.8. Dispose of used oil, lubricant and other waste in accordance with site requirements 2.9. Return and secure all tools and re-usable items 2.10. Maintain servicing and maintenance records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to service and maintain conveyors, feeders and hoppers:

- apply legislative, organisation and site requirements and procedures
- apply site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- apply site and manufacturer's servicing and maintenance requirements and procedures
- apply communication procedures with those providing support
- apply work area and equipment inspection procedures
- apply work area safeguarding options and requirements
- apply isolation and lock-out requirements and procedures
- apply hazard and emergency procedures
- apply site service and maintenance reporting requirements and procedures
- apply procedures for working in confined spaces
- work wearing appropriate personal protective equipment
- use tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to service and maintain conveyors, feeders and hoppers:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- site and manufacturer's servicing and maintenance requirements and procedures
- items required to be used in the servicing and maintenance
- characteristics of the items required in the servicing and maintenance
- tools required for the servicing and maintenance
- servicing and maintenance support requirements and availability
- site work area inspection requirements
- site work area safeguarding options and requirements
- site isolation and lock-out requirements and procedures
- site hazard and emergency procedures
- site service and maintenance reporting requirements and procedures
- site service and maintenance record procedures

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- site requirements and procedures for working in confined spaces
- site requirements and procedures for working in isolation
- site requirements for the use of personal protection equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for servicing and maintaining conveyors, feeders and hoppers • implementation of requirements, procedures and techniques for the safe, effective and efficient servicing and maintaining of conveyors, feeders and hoppers • working with others to service and maintain conveyors, feeders and hoppers that meet all of the required outcomes • consistent timely completion of servicing and maintaining of conveyors, feeders and hoppers that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to service and maintain conveyors, feeders and hoppers

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Servicing may include:	• inspection
	• cleaning
	• clearing blockages
	• greasing
	• checking and topping-up fluids, including:
	  • coolants
	  • lubricants
	  • hydraulic oils

Maintenance may include:	• replacing wear components, including;
	  • skirting material
	  • chute liners
	  • feeder liners
	• replacing v-belts
	• tensioning fasteners, v-belts and conveyor belts
	• track conveyors
	• temporary repairs to conveyor belts

Work requirements may come from briefings, handovers, and work orders and may include:	• service and maintenance schedules • production requirements • nature and scope of tasks • achievement targets • operational conditions • operational requirements • site layout and out of bounds areas • worksite inspection requirements

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	• plant or equipment defects • hazards and potential hazards • coordination requirements or issues
Items may include:	• replacement parts • screening media • fasteners • packing materials
Tools may include:	• hand tools • power tools • special tools
Support may include:	• other site personnel • contractors • cranes • other lifting equipment

Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection

Coordination with others may include with:	• stores personnel • processing plant operators • mobile plant operators • other maintenance personnel
Hazardous and emergency situations may include:	• confined spaces • working alone • personal injury • electrical • dust • noise • environmental • chemical • fire

Unit Sector(s)

Service and Maintenance

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM307A Service and maintain crushers

Modification History

Not applicable.

Unit Descriptor

This unit covers the servicing and maintenance of crushers in coal and metalliferous and extractive industries. It includes: preparation for and carrying out of servicing; and maintenance and the recording and reporting on the servicing and maintenance undertaken

Application of the Unit

This unit is appropriate for those working in operational and maintenance roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service and maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***servicing*** and ***maintenance*** of crushers 1.2. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations 1.3. Identify and obtain ***items*** required for the safe, effective and efficient conduct of the tasks. 1.4. Identify and obtain ***tools*** required for the safe, effective and efficient completion of the tasks 1.5. Identify and arrange ***support*** required for the safe, effective and efficient completion of the tasks 1.6. ***Inspect and prepare work area*** in ***coordination with others*** 1.7. Carry out isolation and lock-out of all equipment necessary for the safe execution of tasks
2. Carry out service and repairs	2.1. Resolve coordination requirements with others at the site prior to commencing and during work activities 2.2. Carry out inspection of crushers, fault find and report outcomes to appropriate person 2.3. Select and use servicing and maintenance tools in an appropriate, safe, effective and efficient manner 2.4. Select and operate servicing and maintenance items safely, effectively and efficiently 2.5. Carry out safe effective and efficient servicing of crushers 2.6. Carry out the safe, effective and efficient maintenance of crushers in accordance with the work requirements 2.7. Recognise and respond to ***hazardous and emergency situations*** 2.8. Dispose of used oil, lubricant and other waste 2.9. Return and secure all tools and re-usable

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	items 2.10. Maintain servicing and maintenance records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to service and maintain crushers:

- apply legislative, organisation and site requirements and procedures
- apply site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- apply site and manufacturer's requirements and procedures for servicing and maintenance of the site's crushers
- communicate with those providing support
- apply work area and equipment inspection procedures
- apply work area safeguarding options and requirements
- apply isolation and lock-out requirements and procedures
- apply hazard and emergency procedures
- apply site service and maintenance reporting requirements and procedures
- work in confined spaces
- work wearing appropriate personal protective equipment
- use tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to service and maintain crushers:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- site and manufacturer's requirements and procedures
- items required to be used in the servicing and maintenance of the site's crushers
- characteristics of the items required in the servicing and maintenance of the site's crushers
- tools required for the servicing and maintenance of the site's crushers
- site crusher servicing and maintenance support requirements and available
- site work area inspection requirements
- site work area safeguarding options and requirements
- site isolation and lock-out requirements and procedures
- site hazard and emergency procedures
- site service and maintenance reporting requirements and procedures

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- site service and maintenance record procedures
- site requirements and procedures for working in confined spaces
- site requirements and procedures for working in isolation
- site requirements for the use of personal protective equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the servicing and maintaining crushers • implementation of requirements, procedures and techniques for the safe, effective and efficient servicing and maintaining of crushers • working with others to service and maintain crushers that meets all of the required outcomes • consistent timely completion of the servicing and maintenance of crushers that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to service and maintain crushers

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Servicing may include:	• inspection
	• cleaning
	• clearing blockages
	• greasing
	• checking and topping-up fluids, including:
	  • coolants
	  • lubricants
	  • hydraulic oils

Maintenance may include:	• replacing wear components, including:
	  • liners
	  • blow bars
	  • plates
	  • rotors
	• adjusting settings
	• replacing v-belts
	• tensioning fasteners and v-belts

Work requirements may come from briefings, handovers, and work orders and may include:	• service and maintenance schedules • production requirements • nature and scope of tasks • achievement targets • operational conditions • operational requirements • site layout and out of bounds areas • worksite inspection requirements • plant or equipment defects

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	• hazards and potential hazards • coordination requirements or issues
Items may include:	• replacement parts • fasteners • packing materials
Tools may include:	• hand tools • power tools • special tools
Support may include:	• other site personnel • contractors • cranes • other lifting equipment

Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection

Coordination with others may include with:	• yard persons • processing plant operators • mobile plant operators • other maintenance personnel
Hazardous and emergency situations may include:	• confined spaces • working alone • personal injury • electrical • noise • dust • environmental • chemical • fire

Unit Sector(s)

Service and Maintenance

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM308A Service and maintain screens

Modification History

Not applicable.

Unit Descriptor

This unit covers servicing and maintaining of screens in the coal and metalliferous mining and extractive industries. It includes: preparing for and carrying out of servicing and maintenance; and the recording and reporting on the servicing and maintenance undertaken.

Application of the Unit

This unit is appropriate for those working in operational or maintenance roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service and maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to the ***servicing*** and ***maintenance*** of screens 1.2. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations 1.3. Identify and obtain ***items*** required for the safe, effective and efficient conduct of the tasks 1.4. Identify and obtain ***tools*** required for the safe, effective and efficient completion of the tasks 1.5. Identify and arrange ***support*** required for the safe, effective and efficient completion of the tasks 1.6. ***Inspect and prepare work area*** in *coordination with others* to work requirements 1.7. Carry out isolation and lock-out of all equipment necessary for the safe execution of tasks
2. Carry out service and repairs	2.1. Resolve coordination requirements with others at the site prior to commencing and during work activities 2.2. Carry out inspection of screens, fault find and report outcomes to appropriate person 2.3. Select and use servicing and maintenance tools in an appropriate, safe, effective and efficient manner 2.4. Select and operate servicing and maintenance items safely, effectively and efficiently 2.5. Carry out safe effective and efficient servicing of screens 2.6. Carry out the safe, effective and efficient maintenance of screens in accordance with the work requirements 2.7. Recognise and respond to ***hazardous and emergency situations*** 2.8. Dispose of used oil, lubricant and other waste

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	2.9. Return and secure all tools and re-usable items 2.10. Maintain servicing and maintenance records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to service and maintain screens:

- apply legislative, organisation and site requirements and procedures
- apply site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- apply site and manufacturer's requirements and procedures for servicing and maintenance of the site's screens
- apply communication procedures with those providing support
- apply work area and equipment inspection procedures
- apply work area safeguarding options and requirements
- apply isolation and lock-out requirements and procedures
- apply hazard and emergency procedures
- apply site service and maintenance reporting requirements and procedures
- apply procedures for working in confined spaces
- work wearing appropriate personal protective equipment
- use tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to service and maintain screens:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- site and manufacturer's requirements and procedures for servicing and maintenance of the site's screens
- items required to be used in the servicing and maintenance of the site's screens
- characteristics of the items required in the servicing and maintenance of the site's screens
- tools required for the servicing and maintenance of the site's screens
- site screen servicing and maintenance support requirements and available
- site work area inspection requirements
- site work area safeguarding options and requirements
- site isolation and lock-out requirements and procedures
- site hazard and emergency procedures
- site service and maintenance reporting requirements and procedures

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- site service and maintenance record procedures
- site requirements and procedures for working in confined spaces
- site requirements and procedures for working in isolation
- site requirements for the use of personal protective equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the servicing and maintaining of screens • implementation of requirements, procedures and techniques for the safe, effective and efficient servicing and maintaining of screens • working with others to service and maintain screens that meet all of the required outcomes • consistent timely servicing and maintaining of screens that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to service and maintain screens

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Servicing may include:	• inspection
	• cleaning
	• clearing blockages
	• greasing
	• checking and topping-up fluids, including:
	  • coolants
	  • lubricants
	  • hydraulic oils

Maintenance may include:	• replacing wear components, including screening media • replacing v-belts • tensioning fasteners and v-belts • temporary repairs to screening media
Work requirements may come from briefings, handovers, and work orders and may include:	• service and maintenance schedules • production requirements • nature and scope of tasks • achievement targets • operational conditions • operational requirements • site layout and out of bounds areas • worksite inspection requirements • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

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Items may include:	• replacement parts • fasteners • packing materials
Tools may include:	• hand tools • power tools • special tools
Support may include:	• other site personnel • contractors • cranes • other lifting equipment

Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection

Coordination with others may include with:	• stores personnel • processing plant operators • mobile plant operators • other maintenance personnel
Hazardous and emergency situations may include:	• confined spaces • working alone • personal injury • electrical • dust • noise • environmental • chemical • fire

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIISAM309A Service and maintain pumps

Modification History

Not applicable.

Unit Descriptor

This unit covers servicing and maintaining pumps in the coal and metalliferous mining and extractive industries. It includes: preparing for and carrying out of servicing and maintenance; and the recording and reporting on the servicing and maintenance undertaken.

Application of the Unit

This unit is appropriate for those working in operational or maintenance roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service and maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to the ***servicing*** and ***maintaining*** of pumps 1.2. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations 1.3. Identify and obtain ***items*** required for the safe, effective and efficient conduct of the tasks 1.4. Identify and obtain ***tools*** required for the safe, effective and efficient completion of the tasks 1.5. Identify and arrange ***support*** required for the safe, effective and efficient completion of the tasks 1.6. ***Inspect and prepare work area*** in coordination with others 1.7. Carry out isolation and lock-out of all equipment necessary for the safe execution of tasks
2. Carry out service and repairs	2.1. Resolve coordination requirements with others at the site prior to commencing and during work activities 2.2. Carry out inspection of pumps, fault find and report outcomes to appropriate person 2.3. Select and use servicing and maintenance tools in an appropriate, safe, effective and efficient manner 2.4. Select and operate servicing and maintenance items safely, effectively and efficiently 2.5. Carry out safe effective and efficient servicing of pumps 2.6. Carry out the safe, effective and efficient maintenance of pumps 2.7. Recognise and respond to ***hazardous and emergency situations*** 2.8. Dispose of used oil, lubricant and other waste 2.9. Return and secure all tools and re-usable items

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	2.10. Maintain servicing and maintenance records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to service and maintain pumps:

- apply legislative, organisation and site requirements and procedures
- apply site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- apply site and manufacturer's requirements and procedures for servicing and maintenance of the site's pumps
- apply communication procedures with those providing support
- apply work area and equipment inspection procedures
- apply work area safeguarding options and requirements
- apply isolation and lock-out requirements and procedures
- apply hazard and emergency procedures
- apply site service and maintenance reporting requirements and procedures
- apply procedures for working in confined spaces
- work wearing appropriate personal protective equipment
- use tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to service and maintain pumps:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- site and manufacturer's requirements and procedures for servicing and maintenance of the site's pumps
- items required to be used in the servicing and maintenance of the site's pumps
- characteristics of the items required in the servicing and maintenance of the site's pumps
- tools required for the servicing and maintenance of the site's pumps
- site pump servicing and maintenance support requirements and available
- site work area inspection requirements
- site work area safeguarding options and requirements
- site isolation and lock-out requirements and procedures
- site hazard and emergency procedures
- site service and maintenance reporting requirements and procedures

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- site service and maintenance record procedures
- site requirements and procedures for working in confined spaces
- site requirements and procedures for working in isolation
- site requirements for the use of personal protective equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the servicing and maintaining pumps • implementation of requirements, procedures and techniques for the safe, effective and efficient servicing and maintaining of pumps • working with others to service and maintain pumps that meet all of the required outcomes • consistent timely servicing and maintaining of pumps that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues.

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	• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to service and maintain pumps

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Servicing may include:	• inspection
	• cleaning
	• clearing blockages
	• greasing
	• checking and topping-up fluids, including:
	  • coolants
	  • lubricants
	  • hydraulic oils

Maintenance may include:	• replacing wear components, including pump seals, liners and impellors • replacing v-belts • tensioning fasteners and v-belts • adjust pump settings
Work requirements may come from briefings, handovers, and work orders and may include:	• service and maintenance schedules • production requirements • nature and scope of tasks • achievement targets • operational conditions • operational requirements • site layout and out of bounds areas • worksite inspection requirements • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

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Items may include:	• replacement parts • fasteners • packing materials
Tools may include:	• hand tools • power tools • special tools
Support may include:	• other site personnel • contractors • cranes • other lifting equipment
Inspect and prepare work area may include:	• identification of hazards • selection and implementation of control measures for the hazards identified • safeguarding site and non-site personnel by: • erection of barricades and posting of signs • selection of appropriate equipment to ensure personnel safety and protection
Coordination with others may include with:	• stores personnel • processing plant operators • mobile plant operators • other maintenance personnel
Hazardous and emergency situations may include	• confined spaces • working alone • personal injury • electrical • dust • noise • environmental • chemical • fire

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIISAM310A Install and commission plant, machinery and services

Modification History

Not applicable.

Unit Descriptor

This unit covers installing and commissioning of plant, machinery and services in the metalliferous mining and extractive industries. It includes: identifying the plant, machinery and services need; selecting plant, machinery and services delivery equipment; installing plant, machinery and services; and commissioning plant, machinery and services.

Application of the Unit

This unit is appropriate for those working in operational and maintenance roles, at worksites within:

- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify plant, machinery and services need	1.1. Access, interpret and apply ***compliance documentation*** relevant to the installing and commissioning of ***plant***, ***machinery*** and ***services*** 1.2. Access and clarify the ***site's requirements and procedures*** relevant to the acquisition of plant, machinery and services equipment 1.3. Seek input and advice from ***relevant parties*** to assist in the identification of appropriate type of plant, machinery and services equipment 1.4. Identify ***parameters*** to be applied in the selection of the plant, machinery and services equipment based on ***relevant requirements*** 1.5. Draw up specifications for plant, machinery and services equipment that meet the requirements of the identified parameters and are in accordance with relevant legislative and mine requirements
2. Select plant, machinery and mine services delivery equipment	2.1. Identify options that meet the selection parameters 2.2. Gather, validate and assess the data on the various options relevant to the selection parameters 2.3. Analyse the various options and select the options that best meet the required parameters 2.4. Procure/obtain and organise delivery of plant, machinery and mine services delivery equipment to the mine-site
3. Install plant, machinery and services	3.1. Obtain, transport and prepare materials and resources required for installation in accordance with plans and relevant manufacturer's or site requirements 3.2. ***Coordinate*** activities with relevant parties at the site prior to commencement of, and during installation and commissioning 3.3. Apply and monitor isolation procedures to establish and maintain a safe work environment throughout installation

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	activities 3.4. Install plant, machinery and services in accordance with manufacturer/supplier specifications, mine procedures and safety requirements 3.5. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and site procedures 3.6. Perform installation work in accordance with agreed plan and outcomes and within the operating capacities of the plant, machinery and services
4. Commission plant, machinery and services	4.1. Carry out inspection of installed plant and machinery to ensure that it complies with relevant technical specifications and safety requirements 4.2. Carry out ***pre-start checks*** according to plant and machinery configurations and system requirements 4.3. Test and test run plant and machinery to ensure compliance with manufacturer/supplier instructions and site mine operational requirements 4.4. Configure and test the operation and capacity of mine services delivery equipment/lines 4.5. Return plant and machinery to service in accordance with site procedures and practices and environmental requirements 4.6. Develop and document plant and machinery inspection and maintenance schedules in accordance with manufacturer/supplier instructions

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to install and commission small mine plant, machinery and services:

- apply legislative, organisation and site requirements and procedures
- apply operational safety procedures
- access, interpret and apply technical and safety information
- interpret and apply survey information and plans
- apply plant and machinery operating procedures
- apply communications procedures and coordinate activities with others
- apply equipment records maintenance requirements
- apply diagnostic/faultfinding techniques
- use hand tools
- apply environmental compliance requirements
- interpret tender documents
- draft and interpret contract management documents
- apply and manage purchasing procedures
- apply contract management requirements and procedures
- assess operating capacity
- assess the compatibility of items of plant and equipment
- determine ownership cost
- determine operating cost targets
- determine product support requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to install and commission small mine plant, machinery and services:

- statutory compliance requirements
- development approval, mining licences (or equivalent)
- OHS requirements
- environmental management requirements
- quality requirements
- purchasing requirements and procedures
- capital expenditure requirements and procedures
- contract management requirements and procedures

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- administration requirements (including records and reports)
- plant and equipment characteristics
- specification requirements
- contract requirements
- operating cost record and analysis procedures
- product support requirements
- market information
- operational requirements
- approved suppliers
- site machinery and plant safety requirements
- legislative and site requirements and procedures
- geological, geographical and survey data
- mining operations
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- risk management procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing and commissioning plant, machinery and services • implementation of requirements, procedures and techniques for the safe, effective and efficient installation and commissioning of plant, machinery and services • working with others to install and commission plant, machinery and services that meet all of the required outcomes • consistent timely installation and commissioning of plant, machinery and services that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to install and commission small mine plant, machinery and services

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Plant and machinery may include:	• hydraulic and pneumatic plant • hoisting plant and equipment • extraction plant and machinery • compressors • agitators • conveyors • electric motors • internal combustion engines • generators • ventilation plant, equipment and devices • drilling equipment • equipment guards
Services may include:	• water pipes and accessories • compressed air lines and accessories • hydraulic lines and accessories • pneumatic lines and accessories • electric cabling and accessories • communication wires and accessories
Site requirements and procedures may include:	• risk management • statutory compliance • development approval, mining licences (or equivalent) • OHS • environmental • quality

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	• purchasing • capital expenditure • contract management • administration (including records and reports)
Relevant parties may include:	• contractors • mine personnel • trades people • plant and machinery manufacturers and suppliers • service providers • utilities suppliers • regulatory bodies • safety advisers
Parameters may include:	• physical size • operating capacity • other performance criteria • quality criteria • occupational health, safety and environmental features required • compatibility with existing plant and equipment • capital cost limitation • ownership cost • operating cost targets • nominated suppliers • product support requirements • training to be provided by supplier • maximum downtime requirements
Relevant requirements may include:	• market considerations • operational considerations • compatibility with existing plant and equipment • capital cost limitations • limitations on downtime • approved suppliers
Coordination may include:	• planning activities • setting priorities for activities • establishing liaison channels with other personnel, neighbouring mines, and regulatory bodies • ensuring work and safety requirements are passed to and reinforced with safety, and

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	operational personnel and contractors
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • fluid levels • job requirements • plant and machinery inspections • personnel availability • equipment status

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM311A Maintain winder equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers maintaining winder equipment in the coal and metalliferous mining industries. It includes: preparing for winder equipment inspection and maintenance; conducting winder equipment maintenance and post-maintenance activities.

Application of the Unit

This unit applies in all contexts to the maintenance of winder equipment, not including shafts. It is appropriate for those working in a operational or maintenance roles, at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for winder equipment inspection and maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to the ***inspection and maintenance*** of ***winder*** equipment 1.2. Receive, interpret and clarify maintenance schedules and details 1.3. Select personal protective equipment appropriate for work activities 1.4. Conduct work according to ***site procedures*** and relevant legislation 1.5. Perform equipment and work area pre-start checks to ensure equipment is ready for maintenance 1.6. Check records for outstanding maintenance/ inspections and recorded defects to assess scope of work 1.7. Identify replacement parts and service tools from the servicing schedule and obtain them from the appropriate stores area. 1.8. Identify, address and report ***potential hazards and risks*** 1.9. Coordinate and liaise with appropriate persons to arrange details of preparatory activities, timing and location of maintenance 1.10. Obtain clearance from winder driver, or establish that start-up procedures have been completed, and the area is clear for operations 1.11. Manage maintenance ***environmental issues*** 1.12. Establish emergency contingency plans with winder driver should an underground emergency arise, and adheres to site emergency procedures 1.13. Ensure area is properly ventilated before entry into work area
2. Conduct winder equipment maintenance	2.1. Check and prepare appropriate tools, materials and services 2.2. Perform all isolation and tagging out 2.3. Ensure person in charge of winder has placed winder in inspection/maintenance

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	mode, including "inching" 2.4. Carry out maintenance 2.5. Complete maintenance and record any follow-up action in accordance with maintenance system requirements 2.6. Ensure all safety guards are in place and tag removed before winder equipment is made operational
3. Conduct post-maintenance activities	3.1. Complete all required documentation clearly, concisely and on time 3.2. Ensure area is clear of foreign materials and tools, and meets an acceptable standard of ***cleanliness*** 3.3. Ensure winding operations are tested and monitored 3.4. Advise appropriate personnel when maintenance activities are concluded

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to maintain winder equipment:

- apply legislative, organisation and site requirements and procedures
- apply standard operating practices and procedures around shafts
- apply safe work practices
- apply procedures to monitor critical components
- apply communication and reporting requirements and procedures
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to maintain winder equipment:

- shaft winder operations
- the key areas of mine safety and health legislation pertaining to plant and winding
- winder types
- shaft infrastructure
- defects which have potential to occur in winder equipment/installations
- maintenance management requirements and procedures for winding systems
- trip and fault conditions and other abnormal conditions
- site emergency procedures
- reporting and recording requirements for winder drivers, electrical and mechanical maintenance personnel
- environmental procedures associated with maintenance of winders
- equipment processes that are applicable, including technical capability and limitations
- energy isolation methods
- operation of protective devices in shaft and winder operations
- mine ventilation system
- site procedures
- in-shaft communications equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for maintaining winder equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the maintenance of winder equipment • working with others to undertake and complete the maintenance of winder equipment that meets all of the required outcomes • consistent timely completion of the maintenance of winder equipment that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the maintenance of winder equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Winder **inspection**/**maintenance** may include:	• winder performance tests • monitoring of protective devices • rope tensioning or replacement or examination • replacement or examination of rope attachments • conveyance change-over • lubrication • winder controller maintenance • sheave wheels • winder drums • head frames • hydraulics • electrical and electronic control systems • computer and communication systems
Winding operations include winder operations in:	• drifts • tunnels • slopes • inclines
Site procedures may include:	• clean up • equipment shutdown and isolation procedures • evacuation procedures • First Aid • notifying relevant authorities • permit-to-work systems

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	• safety equipment • use of personal protective equipment • communication procedures (e.g. with winder operator) • portable electric apparatus procedures • fall arrestor and harness procedures • confined spaces
Equipment **cleaning** methods may include:	• degreasing • forced air • steam cleaning • vacuum • water • rags and cotton waste • solvents
Potential hazards and risks may include:	• communication failure • falling objects • movement of equipment • plant failure • power failure • spillage • unauthorised personnel • visibility • explosion • asphyxiation and drowning
Environmental issues may include:	• dust • water • heat • oxygen deficiency • vibration • fumes • noise • oil spills • flammable and noxious gases • flammable dust

Unit Sector(s)

Service and Maintenance

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM312A Inspect and maintain shafts and structures

Modification History

Not applicable.

Unit Descriptor

This unit covers the inspection and minor maintenance of shafts and structures in the coal and metalliferous mining industries. It includes: preparing for shaft and structures inspection and maintenance; and conducting shaft maintenance and post-maintenance activities.

Application of the Unit

This unit applies in all contexts to the inspection and minor maintenance of shafts and structures, not including winder equipment. It is appropriate for those working in operational and maintenance roles in underground mines, within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for shaft and structures inspection and maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***shaft and structures inspection and maintenance*** 1.2. Receive, interpret and clarify inspection and maintenance schedules and hazard reports 1.3. Select personal protective equipment appropriate for work activities 1.4. Perform equipment and work area pre-start checks to ensure equipment is ready for inspection and maintenance 1.5. Check records for outstanding maintenance/ inspections and recorded defects to assess scope of work 1.6. Identify replacement parts and service tools from the servicing schedule and obtain them from the appropriate stores area 1.7. Identify, address and report ***potential hazards and risks*** 1.8. Coordinate and liaise with appropriate persons to arrange details of preparatory activities, timing and location of inspection and maintenance 1.9. Obtain clearance from ***winder*** driver, or establish that start-up procedures have been completed, and the area is clear for operations 1.10. Establish emergency contingency plans with winder driver should an underground emergency arise, and adhere to site emergency procedures 1.11. Manage maintenance ***environmental issues*** 1.12. Ensure area is properly ventilated before entry into work area 1.13. Install overhead protection and guard rails in accordance with site procedures 1.14. Check and prepare appropriate tools, measuring equipment, materials and services

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2. Conduct shaft maintenance	2.1. Conduct work safely and efficiently and according to ***site procedures*** 2.2. Perform all necessary isolations and tagging 2.3. Establish communication system and perform checks 2.4. Communicate with winder driver and others involved in maintenance of shafts and structures to ensure clear and safe maintenance operations 2.5. Ensure person in charge of winder has placed winder in inspection/maintenance mode, including "inching" 2.6. Perform inspection and maintenance work from top of conveyance 2.7. Carry out maintenance in accordance with site procedures and/or maintenance instructions 2.8. Complete inspection/maintenance and record any follow-up action in accordance with maintenance system requirements 2.9. Ensure all safety devices are in place and any tags placed removed before shaft is returned to service 2.10. Remove overhead protection and guard rails 2.11. Ensure area is clear of foreign materials, communication equipment and tools, and meets an acceptable standard of cleanliness
3. Conduct post-maintenance activities	3.1. Complete all required documentation 3.2. Ensure shaft operations and structures are tested and monitored 3.3. Advise appropriate personnel when maintenance activities are concluded

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to inspect and maintain shafts and structures:

- apply legislative, organisation and site requirements and procedures
- apply standard operating practices and procedures around shafts
- apply safe work practices
- apply procedures for operating and maintaining shafts and structures
- apply procedures of monitoring critical components
- apply communication and reporting requirements and procedures
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to inspect and maintain shafts and structures:

- shaft operations
- shaft construction and infrastructure
- shaft geology
- the key areas of mining acts and regulations pertaining to winding
- shaft installations
- defects which have potential to occur in shafts and infrastructure
- trip and fault procedures and other abnormal conditions
- site emergency procedures
- reporting and recording requirements for winder drivers, and electrical and mechanical maintenance personnel
- environmental procedures associated with shaft maintenance
- equipment processes that are applicable, including technical capability and limitations
- energy isolation methods
- operation of protective devices in shaft and winder operations
- mine ventilation system
- site procedures
- skip and personnel cage operations
- in-shaft communications methods and equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for inspection and maintenance of shafts and structures • implementation of requirements, procedures and techniques for the safe, effective and efficient inspection and maintenance of shafts and structures • working with others to inspect and maintain shafts and structures that meet all of the required outcomes • consistent timely completion of inspection and maintenance of shafts and structures that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to inspect and maintain shafts and structures

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Shaft and structure inspection and maintenance may include:	• inspection of ground conditions, including ground movement, cracks and seepage • inspection of shaft lining including timber, concrete and steel • inspection of shaft structural steel including: buntons, brattice and guide rails, shaft services (pipes, cables etc) • inspection for unusual conditions including water leaks, air leaks • isolation of services where necessary • minor shaft maintenance such as installing missing/broken bolts and fasteners, and shaft timbers • measuring shaft dimensions
Potential hazards and risks may include:	• communication failure • falling objects • projections into the shaft • movement (convergence of equipment) • plant failure • power failure • spillage • unauthorised personnel • visibility • explosion • asphyxiation and drowning
Winding operations include:	• winder operations in drifts, tunnels, slopes or

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	inclines
Environmental issues may include:	• dust • water • heat • oxygen deficiency • vibration • fumes • noise • oil spills • salt build-up • flammable and noxious gases • flammable dust
Site procedures may include:	• clean up • equipment shutdown and isolation procedures • evacuation procedures • First Aid • notifying relevant authorities • permit-to-work systems • safety equipment • use of personal protective equipment • communication procedures (e.g. with winder operator) • portable electric apparatus procedures • fall arrestor and harness procedures • confined spaces

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM313A Monitor, inspect and service ropes and attachments

Modification History

Not applicable.

Unit Descriptor

This unit covers the monitoring, inspection and servicing of ropes and attachments in the coal and metalliferous mining industries. It includes: preparing for, conducting inspection and service: and conducting post-service and inspection activities.

Application of the Unit

This unit is appropriate for those working in operational and maintenance roles, in underground mining operations, within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for inspection and servicing	1.1. Access, interpret and apply ***compliance documentation*** relevant to the monitoring, ***inspection and servicing*** of ropes and attachments 1.2. Receive, interpret and clarify inspection and/or servicing schedules and details 1.3. Select personal protective equipment appropriate for work activities 1.4. Perform equipment and work area pre-start checks to ensure equipment is ready for inspection and/or servicing 1.5. Check records for outstanding inspections and/or maintenance and take appropriate action 1.6. Identify the scope of the inspection, correct ropes and attachments, inspection and servicing tools, equipment and consumables according to the service schedule 1.7. Identify, address and report potential ***hazards and risks*** 1.8. Coordinate and liaise with appropriate persons concerning the work 1.9. Establish that start-up procedures have been completed by the ***winder*** driver, and the area is clear for the work 1.10. Identify, address and report ***environmental issues*** 1.11. Establish emergency contingency plans with winder driver should an underground emergency arise, and adhere to site emergency procedures 1.12. Ensure area is properly ventilated before entry into work area
2. Conduct inspection and service	2.1. Perform necessary isolation and tagging 2.2. Carry out servicing and inspections of ropes according to ***site procedures*** 2.3. Inspect, classify and report anomalies and defects 2.4. Complete service actions and record any follow-up action required 2.5. Ensure all physical guards and safety signs

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	are in place and tags removed, and approval obtained before winder operations are resumed
3. Conduct post-service/inspection activities	3.1. Complete all required documentation 3.2. Return all tools and equipment to storage

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to monitor, inspection and servicing of ropes and attachments:

- apply legislative, organisation and site requirements and procedures
- apply auxiliary equipment operation, servicing, cleaning requirements and procedures
- apply equipment operation, servicing and cleaning requirements and procedures
- use of hand and power tools and measuring instruments

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to monitor, inspection and servicing of ropes and attachments:

- winder operations
- rope and attachment types, their construction and their defects
- the key areas of mining acts and regulations pertaining to winding
- inspection and servicing regimes for ropes and attachments
- use of precision measuring and inspection instruments such as vernier caliper, micrometer screw gauge, straight edge, hand lens
- winder type and operations
- shaft installations
- possible defects in winder equipment/installations
- trip and fault procedures and abnormal conditions
- site winder emergency procedures
- recording and logging requirements for rope servicing and inspection
- environmental procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- isolation procedures
- operation of protective devices for shafts
- operational procedures and checks
- site procedures
- site safety requirements
- skip and personnel cage operations
- start-up and shutdown procedures

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- underground procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for monitoring, inspecting and servicing of ropes and attachments • implementation of requirements, procedures and techniques for the safe, effective and efficient monitoring, inspecting and servicing of ropes and attachments • working with others to monitor, inspect and service of ropes and attachments that meets all of the required outcomes • consistent timely completion of monitoring, inspecting and servicing of ropes and attachments that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the monitoring, inspecting and servicing of ropes and attachments

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Inspection and servicing of winder ropes and attachments and may include:	• visual inspection for defects such as wear, kinks, bends, corrosion, cracks, damage or loss of components, wire breaks, deterioration, distortion, loss of metal, nicks, corkscrewing, bird-caging, structural damage • measurement of rope diameter/loss of metallic area • measurement of rope lay length • visual inspection of moving rope • recording of monitoring and inspection results

Inspection and servicing does not include:	• rope replacement
	• capping
	• cropping
	• destructive testing
	• non-destructive examination/testing using:
	  • magnetic detecting instruments
	  • liquid penetrant
	  • magnetic particle
	  • eddy current
	  • ultrasonic or radiography methods

Rope servicing may include:	• cleaning to remove oil and other lubricants • lubrication (drum winders) • marking location of rope defects
Potential hazards and risks may include:	• communication failure • falling objects

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	• working at heights • movement of equipment • plant failure • power failure • spillage • unauthorised personnel • visibility • explosion • asphyxiation and drowning
Winding operations include winder operations in:	• drifts • tunnels • slopes • inclines
Environmental issues may include:	• fumes • spills • flammable and noxious gases • flammable dust
Site procedures may include:	• clean up • equipment shutdown and isolation procedures • evacuation procedures • First Aid • notifying relevant authorities • permit-to-work systems • safety equipment • use of personal protective equipment • communication procedures, e.g. with winder operator • portable electric apparatus procedures • fall arrestor and harness procedures • confined spaces

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIISAM314A Manage oil and gas drilling equipment maintenance

Modification History

Not applicable.

Unit Descriptor

This unit covers managing of equipment maintenance in the oil and gas drilling industry. It includes: planning and preparing; checking new and used equipment; and planning and organising maintenance and overhauls.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for equipment maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to the managing of equipment maintenance in the oil and gas drilling industry 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential ***hazards*** 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Check new and used equipment	2.1. Test materials and equipment regularly 2.2. Monitor availability of new and used equipment 2.3. Evaluate ***costs***/benefits of replacing equipment, and recommend/implement the purchase/lease of replacement equipment 2.4. Check ***stock levels*** and order ***spare parts and consumables*** in accordance with company procedure 2.5. Maintain communication between operators, company and suppliers 2.6. Check manufacturer's manuals/company procedures for currency and relevancy
3. Plan and organise maintenance and overhauls	3.1. Determine type and frequency of maintenance tasks 3.2. Organise equipment maintenance and service to ensure availability is maintained and downtime minimised 3.3. Monitor performance of maintenance ***schedules*** and take corrective action if necessary 3.4. Arrange sources for obtaining back up or replacement equipment 3.5. Allocate personnel to carry out maintenance tasks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to manage oil and gas drilling equipment maintenance:

- apply legislative, organisation and site requirements and procedures
- apply stocks checking and maintenance requirements and procedures
- apply cost benefit analysis
- apply equipment/consumables order procedures
- apply reporting procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to manage oil and gas drilling equipment maintenance:

- equipment and ancillary attachment characteristics, technical capabilities and limitation
- wear parts and relative frequency of replacement
- purpose of stock control
- financial transactions (e.g. cash flow, cost benefit analysis)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for managing oil and gas drilling equipment maintenance • implementation of requirements, procedures and techniques for the safe, effective and efficient management of oil and gas drilling equipment maintenance • working with others to undertake and complete oil and gas drilling equipment maintenance that meets all of the required outcomes • consistent timely completion of oil and gas drilling equipment maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace context. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete oil and gas drilling equipment maintenance

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work instructions may come from:	• briefings
	• handovers
	• plans and work orders
	• inductions
	• pre-tour safety meetings
	• weekly safety meetings
	• Job Safety Analysis (JSA)
	• agreed procedures may include but are not limited to:
	  • company
	  • facility
	  • client

Work instructions may include:	• nature and scope of tasks, • specifications • quality of finished works • achievement targets, • operational conditions, • obtaining of permits required • site layout, • out of bounds areas, • worksite inspection requirements, • lighting conditions, • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

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	• contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• spillages • toxic chemicals • high pressure air and hydraulic fluid • rotating equipment
Coordination requirements may include	• rig team • maintenance personnel • supervisors • suppliers
Cost items include:	• plant equipment and hire • fuel, materials, drilling stores and bits • maintenance and drill string replacement
Scheduling may include:	• flow charts • time lines/diagrams • planned maintenance manuals
Spare parts and consumables may be identifying by:	• diagrams in makers' handbooks and other documents • lists in maker's handbooks and other documents • labels, bar codes etc, on items
Stock levels can be maintained by:	• two bin system • re-order level system • re-order cycle system • any of the above operating with computer assistance • replenishment system

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIISAM401A Apply site plant, equipment and infrastructure maintenance management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application of the plant, equipment and infrastructure maintenance management plan in resources and infrastructure industries. It includes: planning, preparing for and initiating the maintenance management procedures; and monitoring, adjusting and reporting on the execution of the maintenance management plan.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, on worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, prepare for and initiate maintenance management procedures	1.1. Access, interpret and apply ***compliance documentation*** relevant to applying the maintenance plan 1.2. Access and share the ***geological and survey data*** required to complete the tasks 1.3. Prepare an action plan, in consultation with involved people, which makes best use of the available ***resource*** and takes into account all applicable requirements and procedures 1.4. Acquire and make available the necessary resources for the safe, effective and efficient conduct of maintenance management task in accordance with the ***site plant***, ***equipment and infrastructure maintenance management plan*** and other requirements and procedures 1.5. Issue clear and timely ***instructions*** to people involved in conducting maintenance tasks to ensure the safe, effective and efficient execution of the tasks
2. Monitor, adjust and report on execution of the maintenance management plan	2.1. Ensure safe, effective and efficient execution of tasks in accordance with the maintenance management plan and other requirements and procedures 2.2. Monitor site plant, equipment and infrastructure maintenance management plan performance to ensure achievement of planned outcomes 2.3. Initiate adjustments to work programs to take into account non achievement of planned outcomes 2.4. Complete and submit reports as required by the maintenance management plan and other requirements and procedures 2.5. Recommend changes to improve the safety, efficiency and effectiveness of the site plant, equipment and infrastructure maintenance management plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply site plant, equipment and infrastructure maintenance management plan:

- apply legislative, organisation and site requirements and procedures
- provide team leadership
- apply procedures for choosing appropriate operational and construction techniques
- apply procedures for choosing and assigning appropriate plant and equipment
- apply work plans development and administration procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply the site plant, equipment and infrastructure maintenance management plan:

- site risk, legislative compliance, health, safety, environmental, quality and communication requirements and procedures
- the site plant, equipment and infrastructure maintenance management plan
- team leadership techniques
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying the site plant, equipment and infrastructure maintenance system • implementation of appropriate procedures and techniques for the safe, effective and efficient application of the site plant, equipment and infrastructure maintenance system • working with others to plan, prepare and apply the site plant, equipment and infrastructure maintenance system • provision of clear and timely instruction and supervision by the individual of those involved in the application of the site plant, equipment and infrastructure maintenance system • evidence of the consistent successful application of the site plant, equipment and infrastructure maintenance system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and apply the site plant, equipment and infrastructure maintenance system
	  • provision of clear and timely instruction and supervision by the individual of those involved in the application of the site plant, equipment and infrastructure maintenance system

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include relevant site specific information in relation to:	• rock type and characteristics • faults and joints • water tables or other water sources
Survey data may include relevant site specific information in relation to:	• floor heights • bench widths • grades
Resources may include:	• labour • materials • services • equipment
The site plant, **equipment and infrastructure maintenance plan** may include:	• scheduling requirements • limitation on tasks to be performed by site personnel • nominated suppliers • contact management requirements • administration, including records and reports • oil sampling requirements • housekeeping requirements • cleaning requirements • waste disposal requirements • maintenance of records • inspection requirements • stock take techniques and requirements • risk, legislative compliance, health, safety, environmental, quality and communication

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	requirements
Plant, **equipment and infrastructure maintenance** may include:	• preserve the value of assets • maintenance or serviceability
Instructions may issued in briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout • out-of-bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM402A Supervise operation of electrical equipment and installations

Modification History

Not applicable.

Unit Descriptor

This unit covers supervising the operation of electrical equipment and installations in the extractive industries. It includes: accessing and sharing requirements and procedures; planning and implementing requirements; and monitoring, adjusting and reporting performance. This unit covers the electrical equipment and installations responsibilities of an employee with supervisory role.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, within:

- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Access and share requirements and procedures	1.1. Access, interpret, apply and share with ***team members*** the ***compliance documentation*** relevant to the operation of electrical equipment and installations on the site 1.2. Provide information in a language, style and format that is understood by team members 1.3. Make clear the implications of electrical hazards and inefficiencies to all in the workplace
2. Plan and implement site requirement	2.1. Plan and implement ***control measures*** and ***work practices*** with team members to ensure compliance with legislative, organisation and manufacturer's requirements and procedures 2.2. Access, interpret and clarify ***conditions of electrical supply*** and take them into account in planning site use of electrical energy 2.3. Ensure all electrical work is carried out to legislative requirements by ***people with appropriate licenses and qualifications*** 2.4. Ensure ***electrical plans and drawings*** are kept up to date 2.5. Identify training needs and implement training, coaching and mentoring support to colleagues to ensure safe and ***efficient operation*** of electrical equipment and installations
3. Monitor, adjust and report performance	3.1. Ensure actual and potential electrical hazards and inefficiencies are identified, rectified and reported promptly and decisively 3.2. Manage activities so that potential hazards and inefficiencies with operation of electrical equipment are minimised 3.3. Ensure all electrical equipment is maintained in a safe condition 3.4. Interpret, clarify and apply ***information from monthly electricity account in***

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	optimising energy use 3.5. Submit recommendations on improvements in operation of electrical equipment to designated persons/groups 3.6. Inform individuals/teams of the results of improvements in operation of electrical equipment in the workplace 3.7. Maintain systems, records and reporting procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise operation of electrical equipment and installations:

- apply legislative, organisation and site requirements and procedures
- apply procedures for providing information
- apply electrical hazards identification procedures
- apply electrical risk assessment procedures
- read electrical diagrams
- apply procedures for the preparation of work procedure and instructions
- apply procedures for developing and introducing practices to improve the work environment
- use effective consultative mechanisms to negotiate processes and procedures appropriate to statutory/legal requirements
- explain complex information to superiors/subordinates
- apply coaching and mentoring support procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise operation of electrical equipment and installations:

- legislative, requirements and procedures
- organisation's requirements and procedures
- manufacturer's requirements and procedures
- potential electrical hazards
- plant interlocking and its consequences
- risk management procedures
- basic electrical terminology and theory of operation of common electric motors and control equipment
- type of electrical supply systems (e.g. high medium and low voltage systems)
- electrical risk treatment procedures
- potential electrical inefficiencies
- electrical monitoring requirements and procedures
- work practices that minimise the potential and impact of electrical hazards
- procedures for identifying training needs and implement training
- recording and reporting procedures

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- human resource management
- providing information relating to electrical management
- work procedure/instruction writing

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the management and operation of electrical equipment and installations • implementation of appropriate procedures and techniques for the safe, effective and efficient operation of electrical equipment and installations • working with others to plan, prepare and conduct the operation of electrical equipment and installations • provision of clear and timely instruction and supervision by the individual of those involved in the operation of electrical equipment and installations • evidence of the consistent successful supervision of the operation of electrical equipment and installations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the operation of electrical equipment and installations
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the operation of electrical equipment and installations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Team members may include:	• site personnel • off-site company personnel • contractors • suppliers
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Control measures may include:	• isolation procedures • earthing procedures • lock-out procedures • tagging procedures • earth leakage installation and testing • formal authorisation requirements for carrying out of electrical work • use of appropriate tools, equipment, barriers and safety apparel • enclosures and/or guarding • procedures for restoring supply • start-up sequencing • routine maintenance
Work practices may be included:	• in site work instructions or standard operating procedures
Conditions of electrical supply may include:	• peak time rates • off-peak rates • special power payments • peak demand • general supply charges
People with appropriate licenses	• apply safe systems of work when carrying out

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or qualifications must:	electrical work
	• carry out electrical wiring work to comply with AS/NZS 3000 (Wiring Rules), as amended by local regulations
	• ensure that they perform electrical work only of the type for which they are registered or licensed
	• ensure they test work in accordance with the local regulations
	• ensure that a Certificate of Electrical Safety is completed as required by the local regulations/power authorities
	• ensure that completed prescribed work is inspected by a Licensed Inspector prior to connection to electrical supply or reconnection as appropriate
	• report all electrical incidents, hazards and potential hazards, and take appropriate action to control risks
	• check the operation of portable Residual Current Devices (Safety Switches) before each use
	• electrical contractors:
	  • keep a register of licensed electrical workers who are employed (directly or as sub-contractors) by the contractor
	  • not permit a person to carry out on the contractor's behalf or direct a person to carry out electrical work that does not comply with the local legislative requirements

Electrical plans and drawings should include:	• underground services • overhead services • electrical reticulation • control circuit diagrams
Training should include:	• awareness of the location of and safe clearances to overhead power lines, underground cables and electrical equipment • all electrical incidents, hazards and potential hazards reporting requirements • the need to check the operation of portable Residual Current Devices (Safety Switches) before each use • the need to check operation of portable electrical equipment

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	• the need to operate electrical equipment in accordance with site requirements
Efficient operation may include:	• specified starting sequences • avoiding excessive loads caused by unnecessary mechanical resistance (jamming, blockages) • routine maintenance • routine inspections • minimising demand charges
Information from monthly electricity account may include:	• break down of charges • general supply charge • peak hour charges • off-peak charges • peak demand charges • prior year usage and costs
Optimisation of energy may include:	• identification of major uses of electrical energy • maximising the use of off-peak rates (e.g. hot water and out of hours automated pumping) • sequenced starting to minimise peak demand

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM403A Commission/recommission plant

Modification History

Not applicable.

Unit Descriptor

This unit covers the commissioning and recommissioning of plant in the metalliferous mining industry. It includes: contributing to the design of plant and/or equipment; participating in hazard and operability studies; participating in acceptance of plant and/or equipment; conducting test runs and/or trials; evaluating the results and identify modifications.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Contribute to the design of plant/equipment	1.1. Access, interpret and apply ***compliance documentation*** relevant to commissioning and recommissioning of plant 1.2. Apply process understanding to the design process 1.3. Identify the role and purpose of the plant and equipment 1.4. Ensure design meets the identified need
2. Participate in hazard and operability studies	2.1. Identify process conditions and apply to ***hazard*** and operability studies 2.2. Undertake investigations following hazard studies 2.3. Record and report findings
3. Participate in acceptance of plant/equipment	3.1. Undertake pre Commissioning activities 3.2. Complete safety acceptance ***documentation*** 3.3. Identify, record and report problems or non-conformances
4. Conduct test runs/trials	4.1. Conduct trials/test runs 4.2. Record and report performance data
5. Evaluate results and identify modifications	5.1. Identify modifications and improvements required 5.2. Complete documentation and report to appropriate personnel

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to commission or recommission plant:

- apply legislative, organisation and site requirements and procedures
- apply policy management procedures
- liaise with other parties
- coordinate others
- manage information
- apply problem solving techniques
- apply clear report writing techniques
- access, interpret and apply technical and safety information
- communicate and coordinate activities with others
- apply plant and equipment record keeping requirements and procedures
- apply diagnostic/faultfinding techniques
- apply environmental compliance requirements and procedures
- apply task analyses
- apply atmospheric contaminant measure requirements and procedures
- apply First Aid
- apply fire fighting techniques
- apply negotiation procedures with employers and employees
- provide information, instruction, training and supervision
- apply procedures for proposing practical recommendations for identified key issues

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to commission or recommission plant:

- HAZOP study process and the interpretation of findings
- results and impact of a HAZAN study
- the process of hazard identification, risk assessment and control
- hierarchy of control
- sources of hazard information (such as material safety data sheets)
- principles of operation of equipment
- interpretation of design drawings, schematics and manuals
- principles of operation of instrumentation

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- principles of basic control systems
- distinguish between the following problem sources, and their avoidance:
  - chemical
  - instrument
  - equipment (electrical/mechanical)
- maintenance as is relevant to the practical operation of equipment at that job level
- identifying and clearly communicating key issues

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the commissioning and recommissioning of plant • implementation of appropriate procedures and techniques for the safe, effective and efficient commissioning or recommissioning of plant • working with others to plan, prepare and conduct commission or recommission plant • provision of clear and timely instruction and supervision by the individual of those involved in commissioning or recommissioning of plant • evidence of the consistent successful commissioning or recommissioning of plant
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct the commissioning or recommissioning of plant
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the commissioning or recommissioning of plant

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazards may include:	• rail and road movement • cranes • molten metal • hot materials • noise • air pollution • sharp objects • moving machinery • heights • falling objects • gases
Documentation may include:	• tonnages • quality • analysis/testing • identity • tracking

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIISAM501A Implement and maintain the site plant, equipment and infrastructure maintenance plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation and maintaining of site plant, equipment and infrastructure maintenance plans in resources and infrastructure industries. It includes: planning and preparation of a site maintenance programs; implementation of those programs; and the monitoring, adjusting and reporting on maintenance programs.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles in organisations or on sites, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare a maintenance program	1.1. Access, interpret and apply ***compliance documentation*** relevant to implementation and maintaining of site plant, equipment and infrastructure maintenance plans 1.2. Identify and determine maintenance needs of site plant, equipment and infrastructure in compliance with organisation's ***plant, equipment and infrastructure maintenance*** requirements 1.3. Obtain manufacturers and supplier's advice on maintenance needs of plant, equipment and infrastructure 1.4. Prepare a ***maintenance program***, in consultation with other stakeholders, which meets the organisation's requirements 1.5. Apply ***risk***, statutory compliance, health, safety and environmental management principles when developing the maintenance program 1.6. Identify and gain approval for resources required to support the maintenance program 1.7. Obtain any approvals required for the implementation of the maintenance program
2. Implement maintenance program	2.1. Advise site supervisors and staff of the need for and objectives of the maintenance program and seek their input into its implementation 2.2. Ensure maintenance instructions are in place for each activity and appropriate permitting processes are in place for isolating plant and systems prior to maintenance 2.3. Ensure return to service commissioning and hand over system is in place with operating section 2.4. Arrange identified training requirements for maintenance and any necessary operation/commissioning activities to support the implementation of the program 2.5. Allocate responsibilities and provide clear

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	instructions to supervisors and other appropriate personnel in sufficient detail for them to fulfil their role in the implementation of the program 2.6. Arrange for the timely availability of financial and other resources necessary for the implementation of the program 2.7. Arrange on-line maintenance and outage schedules to minimise impact on mining operations
3. Monitor, adjust and report on program	3.1. Monitor plant performance and use information to predict failure events and need for maintenance 3.2. Ensure procedures are in place to review plant or component failures to assess if redesign of components is required or warranted 3.3. Ensure records of maintenance, monitoring, breakdown, major plant modifications, programmed activities and costs are maintained in sufficient detail to allow later analysis 3.4. Monitor and report on any environmental, safety or other event outside acceptable standards 3.5. Analyse maintenance program performance and identify improvements 3.6. Implement improvements to program having gained approval where necessary 3.7. Complete and submit reports on plant, equipment and infrastructure maintenance in accordance with organisational requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement and maintain the site plant, equipment and infrastructure maintenance plan:

- apply legislative, organisation and site requirements and procedures
- apply statutory and organisational requirements
- apply procedures for identifying maintenance needs
- apply maintenance programs planning techniques
- apply techniques to link maintenance requirements with operational availability opportunities
- apply the organisation plant, equipment and infrastructure maintenance requirements
- apply risk, statutory compliance, health, safety and environmental management principles
- apply financial and other resource estimates and budgets preparation procedures
- provide leadership in the workplace

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement and maintain the site plant, equipment and infrastructure maintenance plan:

- statutory and organisational requirements
- maintenance needs of site plant, equipment and infrastructure
- organisation plant, equipment and infrastructure maintenance requirements
- risk, statutory compliance, health, safety and environmental management principles
- financial and other resources
- analysis techniques
- approval processes
- reporting requirements
- training systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation and maintaining of site plant, equipment and infrastructure maintenance plans • implementation of procedures and techniques for the safe, effective and efficient implementation and maintaining of the site plant, equipment and infrastructure maintenance plan • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of maintenance plan options that best meet the required outcomes • working with others to undertake and complete the implementation and maintenance of the site plant, equipment and infrastructure maintenance plan • consistent successful implementation and maintenance of the site plant, equipment and infrastructure maintenance plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not

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	disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation and maintaining of the site plant, equipment and infrastructure maintenance plans
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of maintenance plan options that best meet the required outcomes
	  • consistently achieving the required

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	outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the implementation and maintenance of the site plant, equipment and infrastructure maintenance plan
	  • provision of clear and timely required support and advice on the implementation and maintenance of the site plant, equipment and infrastructure maintenance plan

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Plant, **equipment and infrastructure maintenance** may include:	• preserving the value of assets • breakdown maintenance or scheduled maintenance • maintenance or serviceability design of plant
Maintenance program may include:	• scheduling requirements • development approval, mining licences, (or equivalent), constraints • limitation on tasks to be performed by site personnel • nominated suppliers • purchasing procedures • contract management requirements • oil sampling requirements • housekeeping requirements • cleaning requirements • waste disposal requirements • workshop and field maintenance facilities • stores • supply of spares, equipment or personnel to meet peak/specialised requirements • maintenance equipment • records and reports requirements • inspection requirements • stock take techniques and requirements • risk, statutory compliance, health, safety, environmental, quality and communication

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	requirements
Risk is defined as:	• "the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood"

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM502B Manage general drilling equipment maintenance

Modification History

Not applicable.

Unit Descriptor

This unit covers managing equipment maintenance in the general drilling industry. It includes: planning and preparing for equipment maintenance; managing movement of stock; planning and organising maintenance and overhauls; evaluating new and used equipment; and maintaining inventories of all items needed on site.

Application of the Unit

This unit is appropriate for those working in management roles, at worksites within:

- Drilling

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for equipment maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to managing equipment maintenance in the general drilling industry 1.2. Obtain, confirm and apply ***work instructions*** for the allocated task 1.3. Identify, manage and report all potential hazards 1.4. Resolve ***coordination requirements*** with others at the site prior to commencing and during work activities
2. Manage movement of stock	2.1. Identify items needed for the worksite 2.2. ***Cost*** and plan delivery of stock, parts and consumables from suppliers and an alternative supplier, having regard to delivery timeframes 2.3. Prepare and maintain checklist of all materials and ***spares*** to ensure the drilling operation continues effectively 2.4. Make arrangements for the safe and secure storage on site/in store/workshop, of materials and spare parts 2.5. Identify wear parts and relative frequency of replacement and determine replacement costs 2.6. Place orders for stock or equipment maintenance in advance of need, to ensure continuous availability 2.7. Develop and implement procedures for issue, return and recording of stock movement 2.8. Maintain inventory in accordance with company requirements 2.9. Record parts usage accurately and in compliance with requirements
3. Plan and organise maintenance and overhauls	3.1. Determine type and frequency of maintenance tasks 3.2. Organise equipment maintenance and service to ensure availability is maintained and downtime minimised 3.3. Monitor performance of maintenance

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	schedules and take corrective action, if necessary 3.4. Arrange sources for obtaining back-up or replacement equipment 3.5. Allocate competent personnel to carry out maintenance tasks 3.6. Ensure records are maintained in compliance with requirements
4. Evaluate new and used equipment	4.1. Test materials and equipment to ensure continuing serviceability in compliance with requirements 4.2. Monitor availability of new and used equipment 4.3. Evaluate costs/benefits of replacing equipment, and recommend/implement the purchase/lease of replacement equipment
5. Maintain inventories of all items needed on site	5.1. Monitor individual machine records in line with replacement policies 5.2. Maintain economic ***stock levels*** by implementing a stock control system to record stock levels and stock usages 5.3. Monitor performance of stock control system and take corrective action if required 5.4. Use approved requisition/purchasing procedures to order parts and supplies at the appropriate time and in the appropriate quantity 5.5. Carry out stocktaking and rotate and monitor ongoing stock levels to ensure continuing availability of spares and materials and in compliance with requirements 5.6. Keep a hazardous substances register 5.7. Ensure resources/stock required for servicing is available only on authorised access 5.8. Prevent/minimise waste or damage to spare parts in storage 5.9. Determine approximate timelines for re-ordering 5.10. Calculate/estimate and order replacement of equipment, consumables, components and materials

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	5.11. Report any problems with stock control or availability of parts to appropriate personnel

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.
Required skills
Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to manage general drilling equipment maintenance: • apply legislative, organisation and site requirements and procedures • apply stocks checking and maintenance requirements and procedures • apply cost benefit analysis • apply equipment/consumables order procedures • apply reporting procedures
Required knowledge
Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to manage general drilling equipment maintenance: • equipment and ancillary attachment characteristics, technical capabilities and limitations • wear parts and relative frequency of replacement • purpose of stock control • financial transactions (e.g. cash flow, cost benefit analysis)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the managing of equipment maintenance in the general drilling industry • implementation of procedures and techniques for the safe, effective and efficient managing of equipment maintenance in the general drilling industry • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete equipment maintenance in the general drilling industry • consistent successful management of equipment maintenance in the general drilling industry
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the managing equipment maintenance in the general drilling industry
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete equipment maintenance in the

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	general drilling industry • provision of clear and timely required support and advice on equipment maintenance in the general drilling industry
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • operational conditions • obtaining of permits required • site layout • worksite inspection requirements • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Coordination requirements may include:	• drill rig operators • maintenance personnel • supervisors
Cost items may include:	• plant equipment and hire • fuel, materials, drilling stores and bits • maintenance and drill string replacement
Spares and consumables may be identified by:	• diagrams in maker handbooks and other documents • lists in maker handbooks and other documents • labels, bar codes, and on items
Scheduling may include:	• flow charting • timelines/diagrams • critical path

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	• just in time (JIT)
Methods of **maintaining stock levels** may include:	• two bin system • re-order level system • re-order cycle system • any of the above operating with computer assistance • replenishment system

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM601A Establish and maintain plant, equipment and infrastructure maintenance system

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining of plant, equipment and infrastructure maintenance systems in resources and infrastructure industries. It includes establishing and maintaining of installation and commissioning procedures; developing systems for the maintenance of plant and equipment; establishing and maintaining systems for the maintenance of worksite infrastructure; and establishing and maintaining systems for audit and review of maintenance systems.

Application of the Unit

Plant, equipment and infrastructure maintenance may include preserving their value as assets and their maintenance or serviceability. This unit is appropriate for those working in a management or technical specialist roles in organisations, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish and maintain installation and commissioning procedures	1.1. Access, interpret and apply ***compliance documentation*** relevant to the establishing and maintaining of plant, equipment and infrastructure maintenance systems 1.2. Establish and maintain procedures to identify ***hazards*** and analyse and evaluate ***risks*** associated with plant, equipment and infrastructure installation and commissioning 1.3. Ensure the integration of new and existing plant and equipment and processes is planned and prepared to achieve optimum performance 1.4. Ensure safe operating procedures and rules are developed from a detailed analysis of worksite and legislative and organisation's requirements 1.5. Ensure plant and equipment installation and commissioning procedures are developed and implemented in accordance with legislative and organisation's requirements 1.6. Ensure infrastructure construction/fabrication and commissioning procedures are developed and implemented in accordance with legislative and organisation's requirements 1.7. Ensure programs, systems and procedures, to satisfy identified plant, equipment and infrastructure training requirements, are developed and implemented 1.8. Ensure emergency response and evacuation plans and procedures are implemented in accordance with legislative and organisation's requirements
2. Develop systems for the maintenance of plant and equipment	2.1. Develop and have approved the organisation's maintenance policy and strategies 2.2. Ensure operational procedures for plant and equipment usage are developed and implemented from legislative and organisation's requirements and

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	manufacturer's information and incorporated into site documentation 2.3. Ensure maintenance systems and procedures for plant and equipment are developed and implemented in accordance with organisation's policies strategies and other relevant legislative and organisation's requirements and manufacturer's instructions 2.4. Ensure maintenance systems documentation is developed and implemented in accordance with legislative and organisation's requirements 2.5. Ensure procedures for reviewing and modifying maintenance work processes are developed and implemented
3. Establish and maintain systems for the maintenance of worksite infrastructure	3.1. Develop and have approved the organisation's infrastructure maintenance policy and strategy 3.2. Ensure operational procedures for worksite infrastructure usage are developed from legislative and organisation's requirements and manufacturer's information and incorporated into site documentation 3.3. Ensure maintenance systems and procedures for worksite infrastructure are developed and implemented in accordance with legislative and organisation's requirements, enterprise maintenance policy and strategies and provider's instructions 3.4. Ensure maintenance systems documentation is developed and implemented in accordance with legislative and organisation's requirements 3.5. Ensure procedures for reviewing and modifying work processes are developed and implemented
4. Establish and maintain systems for audit and review of maintenance system	4.1. Ensure procedures to evaluate and confirm plant, equipment and infrastructure maintenance compliance with legislative and organisation's requirements are developed and implemented 4.2. Ensure future plant, equipment and infrastructure systems and equipment

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	requirements are identified, assessed and incorporated into planning processes 4.3. Ensure procedures to confirm the currency and compliance of plant, equipment and infrastructure maintenance and safety standards are implemented 4.4. Ensure systems for recording and reporting of plant, equipment and infrastructure information are developed and implemented in accordance with legislative and organisation's requirements 4.5. Ensure procedures for incorporating feedback into the audit/review system are developed and implemented 4.6. Ensure procedures to confirm the currency, relevance and compliance of the training program against identified requirements are developed and implemented 4.7. Ensure procedures for response to instances of non-compliance or other discrepancies or deficiencies revealed by audit are developed and implemented

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish plant, equipment and infrastructure maintenance systems:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- apply procedures for assessing the risks
- apply work planning and coordination techniques
- apply procedures to identify training needs related to plant, equipment and infrastructure systems
- interpret manufacturer's instructions
- apply maintenance survey procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish plant, equipment and infrastructure maintenance systems:

- legislative, Australian standards and site specific requirements
- worksite design principles and procedures
- safety design features for maintenance
- worksite operation systems and procedures including:
  - stores systems
  - roadway maintenance
  - protection systems
  - reticulation systems
- specifications for fixed plant and infrastructure
- audit processes
- computer based systems
- training programs
- fire fighting systems and precaution rules
- maintenance surveys techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions required to establish and maintain plant, equipment and infrastructure maintenance systems • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of the plant, equipment and infrastructure maintenance systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable systems options and the selection of options that best meet the required outcomes • working with others to establish and maintain plant, equipment and infrastructure maintenance systems • consistent and timely establishment and maintenance of the plant, equipment and infrastructure maintenance systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establishment and maintenance of the plant, equipment and

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	infrastructure maintenance systems • consistent and timely establishment and maintenance of the plant, equipment and infrastructure maintenance systems • provision of clear, timely required support and advice on the implementation of plant, equipment and infrastructure maintenance systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazard is:	• a source or a situation with a potential for harm in terms of human injury or ill-health, damage to property, damage to the environment, or a combination of these
Risk is:	• the combination of the frequency, or probability of occurrence, and consequence of a specified hazardous event
Maintenance system and procedures may include:	• scheduling requirements • limitation on tasks to be performed by site personnel • nominated suppliers • purchasing • contract management • oil sampling requirements • housekeeping requirements • cleaning requirements • waste disposal requirements • records and report requirements and procedures • inspection requirements • stock take techniques and requirements • risk, statutory compliance, health, safety, environmental, quality and communication requirements

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Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISAM602A Establish and maintain maintenance management system for mechanical plant and equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining maintenance management systems for mechanical plant and equipment in the coal mining industry. It includes: developing, implementing and monitoring the system; auditing, reviewing and reporting on the system.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles, in open cut and underground operations within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop the system	1.1. Access, interpret and apply ***compliance documentation*** relevant to mechanical plant and equipment ***maintenance management systems*** 1.2. Develop ***maintenance strategy*** for plant and ***equipment*** that meets business and legislative requirements 1.3. Consult with relevant stakeholders 1.4. Develop maintenance system to meet the requirements of the maintenance strategy 1.5. Determine resource requirements, including budget and staffing requirements 1.6. Establish roles and responsibilities 1.7. Allocate and train staff to meet maintenance schedules
2. Implement and monitor the system	2.1. Develop procedures and inspection and maintenance schedules 2.2. Communicate strategy to relevant stakeholders 2.3. Implement maintenance management schedules 2.4. Maintain maintenance records 2.5. Monitor effectiveness of the maintenance management system and workplace practices against objectives, timelines, key performance indicators and regulations 2.6. Monitor compliance with the schedules 2.7. Analyse maintenance reports and system output information 2.8. Identify defective components, sub-assemblies and design faults 2.9. Monitor effective use of resources
3. Audit and review	3.1. Develop and document corrective action plan, based on outcome of monitoring process 3.2. Implement and test modifications 3.3. Document system modifications
4. Report on the system	4.1. Document system in accordance with organisation's guidelines

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	4.2. Communicate system to relevant personnel

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish maintenance management system for mechanical plant and equipment:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply:
  - technical information
  - site / legislative requirements
  - records and reports
  - briefings and handover details
- apply procedures to assess the risks and consequences attached to mechanical systems
- apply processes to develop procedures appropriate to mine operations for management of mechanical maintenance systems
- plan and coordinate work
- apply procedures to manage work in confined spaces
- apply procedures to identify training needs related to mechanical maintenance systems
- interpret manufacturer's instructions
- apply maintenance survey requirements and procedures
- liaise with other parties
- coordinate others
- apply information management systems
- apply mechanical maintenance data analyse processes
- use measuring equipment
- write reports
- facilitate meetings

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish maintenance management system for mechanical plant and equipment:

- legislative, Australian standards and site specific requirements including communications, emergency procedures, risk management, recording and reporting, mines rescue, OHS, manufacturer's instructions, standard work procedures, training, fire fighting, handling and storing of dangerous goods, local government and power authority requirements

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- mine operating systems and procedures, including transport systems, conveyor systems, systems of mining, ventilation systems, gas management systems and mine water management systems
- stores systems
- protection systems
- reticulation systems
- specifications from mechanical systems
- audit procedures
- mine design issues relating to mechanical systems
- organisation structure
- use of computer based systems relating to mechanical maintenance systems
- workplace training methods
- safety design features for maintenance of mechanical systems
- maintenance surveys
- work role definitions
- reporting methods and alternatives
- community expectations
- consultative strategies
- alternative documentation systems for procedures
- mine equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing and maintenance of maintenance management system for mechanical plant and equipment • implementation of procedures and techniques for the safe, effective and efficient establishing and maintaining of maintenance management system for mechanical plant and equipment • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to establish and maintain maintenance management system for mechanical plant and equipment • consistent and timely establishing and maintaining of maintenance management system for mechanical plant and equipment
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of option that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establishing and maintaining of maintenance management system for mechanical plant and equipment

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	• consistent and timely gaining of approval of maintenance management system for mechanical plant and equipment • provision of clear, timely required support and advice on the implementation of maintenance management system for mechanical plant and equipment
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Maintenance Management System is:	• the overarching combination of processes that is documented in policies, plans, procedures, schedules, audit and recording mechanisms, which determines how maintenance is implemented, controlled, monitored and reviewed at the mine
Maintenance is to restore or keep at the level that it was originally designed to, by:	• inspecting and testing plant and equipment • monitoring plant and equipment • servicing equipment • repairing equipment • overhauling equipment
Maintenance strategy may include:	• minimising risk to people and equipment • defining the actions necessary to meet business and legislative requirements • review of failure modes • manufacturer's requirements
Equipment may include:	• entire item of plant or individual components of the item of plant
Stakeholders may include:	• regulatory authorities • project managers • contractors • client representatives • government authorities • community groups • engineers • architects

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	• employees

Unit Sector(s)

Service and Maintenance

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISDM501A Conduct mine surveying operations

Modification History

Not applicable.

Unit Descriptor

This unit covers conducting mine surveying operations in the mining industries. It includes: planning and preparing for operations; gathering, organising, processing, analysing, evaluating, interpreting and assembling data; compiling and producing survey records; completing and presenting documentation; and maintaining survey equipment.

Application of the Unit

This unit is appropriate for those working in mine surveyor roles, within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for survey operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to conducting mine surveying operations 1.2. Schedule key activities and time lines 1.3. Identify ***stakeholders*** and organise activities in consultation according to organisation's guidelines 1.4. Plan survey work with due consideration to relevant technical and ***legislative*** requirements 1.5. Conduct work according to site procedures, regulations, OHS, other relevant ***legislation***, manufacturer specifications 1.6. Identify, manage and report potential risks and hazards according to site procedures 1.7. Select and use personal protective equipment 1.8. Adhere to emergency procedures
2. Gather data	2.1. Operate equipment to gather spatial data according to manufacturer's specification, legislative and organisation's guidelines 2.2. Correctly measure identified ***spatial components*** 2.3. Validate and record ***measurements*** in accordance with legislative and project specifications 2.4. Reduce measured spatial data to project spatial reference system for comparison against ***design*** parameters as required 2.5. Identify inconsistencies in information by verification and recording them 2.6. Determine uses and limitations of base data
3. Organise and process data	3.1. Identify the outcomes and elements of systems, and design and develop systems standards and integrate into data management quality programs 3.2. Verify the integrity of base ***spatial and textual data*** and process and store those data to achieve specific outcomes 3.3. Verify the integrity of processed data

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	3.4. Select appropriate database and collate relevant spatial and textual data in one system for transfer and integration into other systems as required 3.5. Convert and transfer data between systems and media, employing appropriate ***technology and procedures*** 3.6. Administer databases by applying effective procedures and systems for the manipulation of information, and the security and maintenance of data
4. Analyse, evaluate and interpret data	4.1. Apply systems to analyse spatial data and information 4.2. Determine the required accuracy and reliability of spatial data and information 4.3. Interpret data to ensure that they are relevant to client/stakeholder needs 4.4. Enhance or add value to data, where required, to increase the quality and usability of data 4.5. Collate and relate data to specific areas of operations
5. Assemble data	5.1. Identify, clarify and satisfy stakeholder and operations personnel spatial data requirements 5.2. Create specific information from a number of databases to meet the needs of clients or legislation 5.3. Assemble data into useful sets of information using relevant technology and procedures 5.4. Compile and produce maps, ***plans*** and charts 5.5. Format data according to legislative and organisational standards and needs
6. Compile and produce survey records	6.1. Determine the application/uses and limitations of base spatial data 6.2. Maintain records of original survey (raw) data such as field books and data input files 6.3. Identify, select and apply available ***techniques and technology*** best suited to present graphical and photographic records to meet client needs 6.4. Transfer spatial data between various

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	media to provide consolidated digital spatial information, ensuring the accuracy and reliability and maximum potential of the data 6.5. Integrate spatial data with other information to provide consolidated digital spatial information, ensuring the accuracy and reliability and maximum potential of the data 6.6. Create ***models*** of nature or cultural entities and phenomena 6.7. Create model files and integrate with other data 6.8. Transfer model files between various media
7. Complete and present documentation	7.1. Record data according to accepted industry and legislative standards 7.2. Resolve omissions and gaps in spatial data 7.3. Complete promptly and accurately all required documentation according to legislative and organisational requirements 7.4. Store all documentation according to legislative and organisational requirements 7.5. Prepare ***information and reports*** in a format and detail appropriate to the client/stakeholder and employ appropriate ***communication and display techniques*** to present information and reports 7.6. Apply effective validation procedures to verify the accuracy and reliability of data which are to be certified 7.7. Certify and sign-off data and information to meet legislative and company/site requirements
8. Maintain survey equipment	8.1. Check ***survey instruments*** and ensure accuracy and performance in accordance with site practices, legislation and manufacturer's instructions 8.2. Calibrate survey instruments to ensure correct and accurate measurements in accordance with site practices, legislation and manufacturer's instructions 8.3. Ensure safe storage and transport of ***equipment*** and survey instruments in

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	accordance with site practices and legislation 8.4. Maintain equipment and survey instrument condition and cleanliness

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct mine surveying operations:

- apply legislative, organisation and site requirements and procedures
- apply procedures for consulting with stakeholders and others
- apply risk management practices
- apply investigation requirements and procedures
- apply effective communication techniques
- apply instructions
- apply strategic planning techniques
- apply professional judgement
- apply attention to detail
- interpret data/information
- perform under adverse conditions
- apply effective observation techniques
- apply policy management requirements and procedures
- apply interpersonal skills
- liaise with other parties
- apply coordination techniques
- apply information management requirements and procedures
- apply problem solving techniques
- analyse data/information
- use surveying equipment
- apply clear report writing techniques
- facilitate meetings

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct mine surveying operations:

- measurement techniques
- accuracy and precision requirements
- limitations of equipment, measuring and analysis guidelines
- map reading and spatial comprehension
- site geography and geology

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- mine operations in their workplace
- cartographic principles
- surveying techniques
- survey equipment
- survey equipment care and maintenance
- project reporting guidelines
- spatial reference systems
- spatial data reduction and manipulation techniques
- GIS principles and techniques
- risk management principles
- company organisation
- work role definitions
- reporting methods and alternatives
- relevant standards, licenses and permits
- safe work practices
- emergency procedures and obligations
- community expectations
- consultative strategies
- alternative documentation systems for procedures
- environmental issues

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conducting of mine surveying operations • implementation of procedures and techniques for the safe, effective and efficient conducting of mine surveying • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete mine surveying operations • consistent successful conducting mine surveying operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of mine surveying operations
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete mine surveying operations
	  • provision of clear and timely required support and advice on the conducting of

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	mine surveying operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Stakeholders may include:	• clients • client representatives • government authorities • community groups • geologists • engineers • architects/cartographers • operators • supervisors • contractors • environmentalists/ecologists
Legislation may include:	• industry codes, regulations, standards and guidelines • environmental legislation • health and safety legislation • mining tenure regulations • third tier of legislation • surveying legislation • cultural and heritage legislation
Spatial components may include:	• position • dimension • height • direction • depth • slope

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	• volume • stratum
Measurements may be made with:	• theodolite • EDM • GPS • tape/level • photogrammetry • remote sensing • tide gauge • current meter • echo sounder(seismic) • laser scanner • borehole camera
Design may be represented by:	• hard copy plans or maps • digital plans or maps
Spatial and textual data may include:	• coordinates • AMG • lats/longs • grid systems • local grid systems
Technology and procedures may include:	• proven industry standard calculation procedures • hand held calculators, computer software applications • direct instrument download hardware and software applications • GPS • data recorders • text data management procedures
Plans may include:	• policies and procedures relevant to legislation, health and safety or environment, • documentation and records • regulatory and legal compliance • hazard plan • colliery development plan • fire fighting plan • stone dust plan • emergency evacuation plan • gas drainage plan • ventilation plan • risk zone management plan • Survey Memo/Work Instruction

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Techniques and technology may include:	• computer generated DTM modelling • CAD dxf format files • media including: • plain paper hardcopies • CAD files (dxf)/GIS files • via e-mail - PDF Format, dxf files
Models may include:	• physical representation, at a different scale, of a real thing • physical models • computer generated models • virtual models • digital models • dynamic models
Information and reports may include:	• plans, maps • digital display • written reports • historical data • graphs, models • formulae
Communication and display techniques may include:	• plans, maps • 'Powerpoint' display • written reports
Survey instruments may include:	• GPS • electronic theodolite • microptic theodolites • levels • alignment lasers • photogrammetric instruments • laser scanners
Equipment may include:	• transport vehicle • tripods • prisms • survey accessories • field books and data recorders

Unit Sector(s)

Spatial Data Management

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISRM301B Blend stockpile materials

Modification History

Not applicable.

Unit Descriptor

This unit covers the blending of stockpile materials in the metalliferous mining industry. It includes: identifying and assessing materials; and blending materials.

Application of the Unit

This unit applies in all contexts to the blending of ore in the extractive process for the open cut environment. This unit is appropriate for those working in mobile plant operator roles, within:

- Coal mining
- Metalliferous mining
- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and assess material for blending	1.1. Access, interpret and apply ***compliance documentation*** relevant to the blending of stockpile materials 1.2. Receive, interpret and clarify shift changeover details 1.3. Identify, manage and report ***potential hazards and risks*** according to work plan 1.4. Select personal protective equipment appropriate for work activities 1.5. Use approved dust suppression and extraction methods 1.6. Identify and locate correct ***material grade*** according to ***stockpile plan*** 1.7. Communicate with other personnel using approved communication methods 1.8. Adhere to emergency procedures to ensure safety of personnel, plant and ***equipment***
2. Blend materials	2.1. Select the correct quantity and grade of material and use appropriate blending techniques to achieve required blend of minerals 2.2. Avoid contaminating surrounding site and access roads 2.3. Monitor blending process to ensure correct grades of minerals are selected 2.4. Remove and/or manage ***contaminants*** upon identification

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to blend stockpile materials:

- apply legislative, organisation and site requirements and procedures
- apply diagnostic techniques
- apply decision making techniques
- apply procedures for directing operations
- apply driving techniques
- apply procedures for operating, maintaining and cleaning equipment
- apply hazard identification procedures
- apply hazardous goods handling techniques
- interpret plans, reports, maps, specifications
- apply records maintenance requirements
- organise work tasks
- apply defect reporting requirements
- apply safe work practices
- select and fit personal protective equipment
- work in a team
- apply troubleshooting procedures
- use communications equipment
- use computer systems
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to blend stockpile materials:

- blending procedures
- dust suppressant characteristics and limitations
- emergency procedures
- environmental and heritage procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- hazardous goods procedures and consequences of spills
- isolation procedures
- material grade recognition
- material placement procedures

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- site operational system
- night and day working procedures
- OHS procedures
- open cut procedures
- operational procedures and checks
- principles of contamination
- start-up procedures
- shutdown procedures
- site procedures/site safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for blending of stockpile materials • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the blending of stockpile materials • working with others to undertake and complete the blending of stockpile materials that meets all of the required outcomes • consistent timely completion of the blending of stockpile materials that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the blending of stockpile materials

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Potential hazards and risks may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground • unstable faces • vehicles
Materials may include:	• gravel • overburden • oxidised waste • rejects • road base • rubbish • sand • sulphide rock fill • tailings • topsoil

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	• water • backfill • dilution material • gangue • mineralised waste • mullock • rehabilitation soils and other materials (clay bands, gravel) • road base • rubbish • sand • secondary material • various grades of ore
Grade may include:	• class • colour • high • low • mineral content • moisture content • type
Stockpile plan may include:	• coordination of activities • map • segregation of ore types • signage requirements • stockpile construction details (angle of repose, height) • total area
Equipment may include:	• bins • conveyors • dozers • dust suppression equipment • feeders • gates • loaders • magnets • ploughs • reclaimers • samplers • shovels • stackers • trucks • weighers

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Contaminants may include:	• animal carcasses (sheep, cows, kangaroos) • cigarette butts • consumables • ear plugs • metal bucket teeth • metal or steel rods • old fencing/old piping • plastic • timber

Unit Sector(s)

Stockpile and Reclaim Material

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISRM302B Conduct stockpile reclaiming operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of stockpile reclaiming operations in the coal and metalliferous mining industries. It includes: preparing for stockpile reclaim operations; operating reclaim plant and equipment; and carrying out operator maintenance.

Application of the Unit

This unit is appropriate for those working in operational roles, at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conducting of stockpile reclaiming operations 1.2. Obtain, interpret and clarify/confirm ***work requirements*** and ***shift details*** before proceeding 1.3. Access, interpret and apply ***geological and survey data*** required to complete the allocated work 1.4. Carry out worksite inspection and rectify or report ***hazards*** or other notifiable conditions 1.5. Access and apply ***safety information and procedures*** throughout the work
2. Operate plant and equipment	2.1. ***Coordinate activities*** with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up and shutdown procedures 2.3. Operate controls to reclaim materials 2.4. Act on or report monitoring systems and alarms 2.5. Load, sample and despatch specified materials 2.6. Recognise and respond to ***hazardous and emergency situations*** 2.7. Complete work in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment 2.8. Carry out ***reporting*** and complete and process documents
3. Carry out operator maintenance	3.1. Carry out ***plant and equipment*** inspections and faultfinding 3.2. Carry out routine ***operational servicing***, ***lubrication and housekeeping*** tasks 3.3. Visually inspect structures and components for fault conditions, wear and need of repair or replacement 3.4. Process maintenance records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct stockpile reclaiming operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply diagnostic techniques
- use hand and power tools
- prepare and communicate reports
- apply environmental compliance requirements
- apply procedures for disposal of environmentally sensitive fluids and materials
- apply records maintenance requirements
- apply procedures for working at heights

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to conduct stockpile reclaiming operations:

- site and equipment safety requirements and procedures
- stockpile management processes
- reclaimer characteristics, technical capabilities and limitations
- reclaimer maintenance procedures/reclaimer operating procedures
- basic mineralogy related to materials quality
- blending specifications and techniques
- causes of and responses to spontaneous combustion (coal mining only)
- environmental requirements and constraints related to reclaim operations
- recording and reporting processes
- impact of reclaiming operations on customer quality requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting stockpile reclaiming operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of stockpile reclaiming operations • working with others to undertake and complete stockpile reclaiming operations that meets all of the required outcomes • consistent timely completion of stockpile reclaiming operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete stockpile reclaiming operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements may be in the form of:	• shift briefings • handover details • work orders
Shift details may include:	• nature and scope of the work • working conditions • achievement targets • site lighting arrangements • defects on equipment • hazards and potential hazards • coordination requirements/issues
Geological and survey data may include:	• safety factors relating to natural fall • grades • levels • faults • slips • strata • drainage
Hazards may include:	• spontaneous combustion • wet weather operations • electrical start-up and shutdown • belt systems fires • electrical fires • working with other equipment
Safety information and procedures may be contained in:	• legislation and regulations • relevant Australian standards

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	• management plans
	• OHS policy
	• code of practice
	• manufacturer's instructions
	• safe working procedures (or equivalent)
	• specific safety requirements including:
	  • boarding and disembarking procedures
	  • identifying and confirming potential hazards
	  • relocating and operational signal procedures

Coordination activities may include:	• communication with personnel • awareness of other support plant • equipment
Hazardous and emergency situations may include:	• sinking • spoil and highwall stabilisation • wet weather operation • electrical start-up and shutdown • belt system fires • electrical fires • windy and dusty conditions • working in close proximity to moving equipment and parts
Reporting and recording may include:	• control room log • computer reports • accident/incident reports • check sheets • pre-shift equipment reports/defect reports • tags • work orders
Reclaimer equipment may include:	• bucket wheel • bridge • A-frame • driver reclaimers
Other plant and equipment may include:	• dozers • loaders • trucks
Operator service, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• cleaning • authorised servicing • conduct of authorised minor replacements • provision of assistance to maintenance

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	personnel during maintenance and repair activities

Unit Sector(s)

Stockpile and Reclaim Material

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISRM303B Move and position materials to form stockpiles

Modification History

Not applicable.

Unit Descriptor

This unit covers the moving and positioning of materials to form stockpiles in resources and infrastructure industries. It includes organising for and stockpiling materials.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Civil construction
- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise for stockpiling	1.1. Access, interpret and apply ***compliance documentation*** relevant to moving and positioning of materials to form ***stockpiles*** 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Identify, address and report ***environmental issues*** 1.6. Confirm stockpile ***boundaries*** and ***signage*** are erected according to site procedures 1.7. Adhere to emergency procedures 1.8. Identify, address and report potential risks and ***hazards***
2. Stockpile materials	2.1. Stockpile ***materials*** in specified location 2.2. ***Inspect*** stockpile structure and surrounding area 2.3. Identify and manage ***contaminants*** to protect quality of material and protect ***equipment*** and environment 2.4. Construct stockpile according to site ***stockpile plan*** 2.5. Ensure stockpile has adequate drainage to minimise contamination of stockpile and surrounding areas 2.6. Maintain pad according to site parameters 2.7. Complete all required documentation clearly, concisely and on time 2.8. Pass on end of shift information to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to move and position materials to form stockpiles:

- apply legislative, organisation and site requirements and procedures
- apply materials dumping techniques
- apply procedures for operating, maintaining and cleaning equipment
- apply hazard identification procedures
- interpret plans, maps, specifications
- apply procedures for monitoring operations
- apply OHS procedures
- apply defect reporting requirements
- use hand and power tools
- apply stockpile safety requirements

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to move and position materials to form stockpiles:

- bund construction and maintenance procedures
- drainage principles
- emergency procedures
- environmental principles
- isolation principles
- metallurgical and technical data
- selection of equipment
- operational procedures and checks
- road rules
- signage
- stockpile safety requirements
- stockpiling characteristics and limitations
- stockpiling procedures
- types of ores
- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for moving and positioning of materials to form stockpiles • implementation of requirements, procedures and techniques for the safe, effective and efficient moving and positioning of materials to form stockpiles • working with others to move and position materials to form stockpiles that meets all of the required outcomes • consistent timely completion of moving and positioning of materials to form stockpiles that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to move and position materials to form stockpiles

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
A **stockpile** may be temporary or permanent and may be:	• a hole • bulk storage • formation of earthworks (cone, flat) • silo • warehouse
Environmental issues may include:	• drainage • dust and fumes • emissions • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality
Boundaries may be fixed or mobile and may include:	• chalk and paint markings • cones • flag and string fences • wire
Signage may include:	• danger • height • one way • safety • stop • stockpile numbering or name

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Hazards may include:	• day and night • degree of compaction • dry and wet • location of water table • mobile equipment in area • overhead power-lines • persons on foot • slope of working surface • stable ground and broken ground • working at heights • working over old underground workings and voids
Materials may be wet or dry and may include:	• beneficiation product • crushed ore • road base • run of mine ore • sand • gravel • crushed aggregate • tailings • topsoil • waste rock
Inspections may include:	• detection of contaminants and hazards • isolations • ore types • overhead clearance (e.g. height limitations or power links for cranes or trucks) • personal proximity • possible faults and problems • safety equipment
Contaminants are anything other than the ore or products and may include:	• containers • packaging • fuels • metal • oils • piping • rubbish • timber
Equipment may include:	• bins • conveyors • dust suppression equipment

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	• mobile equipment
Stockpile plan may include:	• map • coordination of activities • total area • segregation of material types • signage requirements • stockpile construction details (angle of repose, height) • compaction requirements (coal mining)

Unit Sector(s)

Stockpile and Reclaim Material

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISRM304B Maintain stockpiles

Modification History

Not applicable.

Unit Descriptor

This unit covers maintaining stockpiles in the metalliferous mining and extractive industries. It includes: maintaining the stockpile; suppressing dust; and maintaining stockpile access roads and bunds. This unit applies in all contexts to the maintenance of stockpiles, suppression of dust and maintenance of stockpiles in the extractive process in the open cut environment.

Application of the Unit

This unit is appropriate for those working in mobile plant operator roles, at worksites within:

- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Maintain stockpile	1.1. Access, interpret and apply ***compliance documentation*** relevant to maintaining stockpiles 1.2. Receive, interpret and clarify shift changeover details 1.3. Maintain battering angle of stockpile 1.4. Select personal protective equipment appropriate for work activities 1.5. Visually inspect stockpile structure and surrounding area to assess the safety and progress of stockpile formation 1.6. Dump and move ***stockpile material*** using appropriate techniques to form stockpile battering angle and prevent slumping 1.7. Inform appropriate ***personnel*** of spillage and take appropriate measures to manage and/or remove spill 1.8. Remove and dispose of ***contaminants*** from stockpile upon identification 1.9. Communicate with other personnel using approved communication methods 1.10. Adhere to emergency procedures to ensure safety of personnel, plant and equipment 1.11. Turn stockpile material utilising appropriate equipment and techniques
2. Suppress dust	2.1. Maintain stockpile structure to prevent dust creation and unwanted material movement 2.2. Adjust stockpiling activities due to ***weather conditions*** and dust suppression policy
3. Maintain stockpile access roads and bunds	3.1. Maintain stockpile access roads 3.2. Maintain safety and condition of ***bunds*** 3.3. Maintain stockpile access roads free from spillages and obstructions to avoid restricting equipment movement to and from stockpiles

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to maintain stockpiles:

- apply legislative, organisation and site requirements and procedures
- apply diagnostic techniques
- apply decision making techniques
- apply procedures to direct operations
- apply procedures for operating, maintaining and cleaning equipment
- apply hazard identification procedures
- apply hazardous goods handling techniques
- interpret plans, reports, maps, specifications
- apply lifting techniques (manual, cranes and loads)
- apply records maintenance requirements
- apply work task organising procedures
- apply defect reporting requirements
- apply safe work practices
- select and fit personal protective equipment
- work in a team
- use communications equipment

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to maintain stockpiles:

- bund construction
- drainage processes
- dumping procedures
- dust suppressant characteristics and limitations
- emergency procedures
- environmental and heritage procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- hauling procedures
- hazardous goods procedures and consequences of spills
- isolation procedures
- material placement procedures
- mine operational system

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- night and day working procedures
- OHS procedures
- open cut procedures
- operational procedures and checks
- principles of contamination
- road rules
- start-up procedures
- shutdown procedures
- site procedures
- site safety requirements
- stockpiling characteristics and limitations
- stockpiling procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for maintaining stockpiles • implementation of requirements, procedures and techniques for the safe, effective and efficient maintaining of stockpiles • working with others to maintain stockpiles and meet all of the required outcomes • consistent timely maintenance of stockpiles that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical

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	resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to maintain stockpiles

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Stockpile materials may include:	• backfill • dilution material • gangue • mineralised waste • mullock • rehabilitation soils and other materials (clay bands, gravel) • road base • rubbish • sand • secondary material • various grades of ore
Personnel may include:	• contractors • drivers • holders of appropriate tickets • inspectors • licensed operators • maintenance staff • personnel authorised by mine management • service personnel • supervisors • tradespersons • visitors
Contaminants may include:	• animal carcasses (sheep, cows, kangaroos) • cigarette butts

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	• consumables • ear plugs • metal bucket teeth • metal or steel rods • old fencing • old piping • plastic • timber
Weather conditions may include:	• cyclones • dry • floods • heat • rain • storms (hail, electrical) • strong winds
Bund may include:	• berm • various materials (old tyres, materials, rocks) • windrow

Unit Sector(s)

Stockpile and Reclaim Material

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISRM401A Apply and monitor the site stockpile management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of site stockpile management plan in the coal mining and extractive industries. It includes: planning, preparing for and initiating site stockpile management tasks; and monitoring, adjusting and reporting on the execution of the stockpile management plan.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, within:

- Coal mining
- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, prepare for and initiate tasks	1.1. Access, interpret and apply ***compliance documentation*** relevant to site stockpile management 1.2. Access and share with team members the ***geological and survey data*** required to complete the site stockpile management task 1.3. Prepare an action plan, in consultation with team members, which makes best use of the available resource and takes into account the requirements of the ***site stockpile management plan*** 1.4. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of site stockpile management task 1.5. Issue clear and timely ***instructions*** to team members and others involved for the safe, effective and efficient conduct in the site stockpile management tasks
2. Monitor, adjust and report on execution of the management plan	2.1. Ensure safe, effective and efficient execution of tasks 2.2. Monitor site stockpile management plan performance to ensure achievement of planned outcomes 2.3. Initiate adjustments to work programs to take into account non-achievement of planned outcomes. 2.4. Complete and submit reports as required 2.5. Recommend changes to improve the safety, efficiency and effectiveness of the site stockpile management plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply and monitor site stockpile management plan:

- apply legislative, organisation and site requirements and procedures
- provide team leadership
- apply procedures for selecting operational and construction techniques
- apply procedures to selecting and assigning plant and equipment
- apply procedures to develop and administer work plans

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply and monitor site stockpile management plan:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- the site stockpile management plan
- team leadership techniques
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the application and monitoring of site stockpile management plans • implementation of appropriate procedures and techniques for the safe, effective and efficient application and monitoring of site stockpile management plans • working with others to plan, prepare, apply and monitor site stockpile management plans • provision of clear and timely instruction and supervision by the individual of those involved in site stockpile management plans • evidence of the consistent successful application and monitoring of site stockpile management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare, apply and monitor site stockpile management plans
	  • provision of clear and timely instruction and supervision by the individual of those involved in the application of the site stockpile management plan

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • water tables or other water sources • coal • inter seam • coal quality
Survey data may include relevant site-specific information in relation to:	• floor heights • bench widths • grades • stockpile level • stockpile volumes
The site stockpile management plan may include:	• height and dimensional restrictions • signage requirements • base preparation requirements • drainage requirements • inspection requirements • system methodology • stockpile full and empty arrangements • equipment operating and maintenance procedures • emergency precautions and evacuation processes • handling spontaneous combustion • coal blending • automation and manual override

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	• monitoring systems • reporting requirements • communication to others in supply and delivery • restrictions or procedural requirements for using mobile plant on top of stockpiles • restrictions or procedural requirements for using mobile plant on top of stockpiles • requirements for working under a face on stockpiles • stock take techniques and requirements
Resources may include:	• labour • materials • services and • equipment
Instructions may be issued in briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Unit Sector(s)

Stockpile and Reclaim Material

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISRM501A Implement the stockpile management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of the stockpile management plan in the coal and metalliferous mining and extractive industries. It includes preparation for, planning, initiating, monitoring, adjusting and reporting on the implementation of stockpile management.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for development of the management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the implementation of the ***stockpile management plan*** 1.2. Obtain, review and interpret the site and transport arrangements, ***geological and survey data*** relevant to the implementation of the management plan 1.3. Identify, interpret and clarify site requirements relevant to the implementation of the management plan
2. Prepare the management plan	2.1. Involve ***internal and external stakeholders*** in the planning process in a way that uses their contribution effectively and gains their support for the outcomes 2.2. Develop and document the management plan to meet the site operational requirements and in accordance with the stockpile management system, geological and survey data and other relevant requirements and procedures. 2.3. Identify and acquire the ***resource*** required for the implementation of the management plan 2.4. Identify and arrange any training required for personnel involved in the stockpile management operations. 2.5. Prepare and present the stockpile management operations budget
3. Initiate, monitor and adjust the implementation of the management plan	3.1. Issue and explain the stockpile management plan to team members and others involved, for the safe, effective and efficient implementation of the plan. 3.2. Provide timely ongoing support and advice to those implementing the management plan. 3.3. Ensure records and reports are maintained and issued in accordance with the stockpile management plan requirements and other relevant requirements 3.4. Monitor the stockpile management

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	performance against the site, the budget and other relevant requirements 3.5. Resolve anomalies in consultation with relevant stakeholders and issue appropriate instructions for adjustments to the plan and/or its implementation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement the stockpile management plan:

- apply legislative, organisation and site requirements and procedures
- interpret and apply legislative and organisational requirements
- interpret and apply geological and survey data
- provide team leadership
- apply procedures for planning operations
- apply procedures for selecting construction techniques
- apply selecting and assign plant and equipment
- apply procedures for selecting development strategies
- apply procedures for developing, initiating and administering work plans
- interpret and apply operational performance data

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement the stockpile management plan:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- geological and survey data
- organisation stockpile management policy, objectives and procedures (where they exist)
- site stockpile management development options and procedures
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- team leadership techniques
- consultative and coaching techniques
- work monitoring methods
- recording and reporting systems
- training systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation of stockpile management plans • implementation of procedures and techniques for the safe, effective and efficient implementation of stockpile management plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the implementation of stockpile management plans • consistent successful implementation of stockpile management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of the stockpile management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the implementation of the

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	stockpile management plans • provision of clear and timely required support and advice on the application of stockpile management plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
The site stockpile management plan may include:	• risk management requirements • occupational health and safety requirements • environmental requirements • height and dimensional restrictions • signage requirements • base preparation requirements • drainage requirements • method of construction and load-out • system methodology • stockpile full and empty arrangements • equipment operating and maintenance procedures • emergency precautions and evaluation processes • handling spontaneous combustion • bulk material blending • automation and manual override • monitoring systems • reporting requirements • communication to others in supply and delivery • access to and from stockpile • segregation requirements • safety areas • stockpile identification requirements • inspection requirements

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	• restrictions or procedural requirements for using mobile plant on top of stockpiles • requirements for working under a face on stockpiles • stock take techniques and requirements • sprinkler systems
Geological data may include:	• rock (or other resource) types and characteristics • faults and joints • Inter seam • material quality
Survey data may include:	• floor height and grade • drainage requirements • stockpile levels • stockpile volumes • on-line quantity/quality monitoring
Internal and external stakeholders may include:	• site and off-site employees • contractors • equipment suppliers • geologists, surveyors and/or draughtspersons • regulatory authorities representatives • community representatives • site neighbours
Resources may include:	• financial • labour • materials • services • plant • equipment

Unit Sector(s)

Stockpile and Reclaim Material

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIISRM502A Design stockpile formations and reclaiming systems

Modification History

Not applicable.

Unit Descriptor

This unit covers designing of stockpile formations and reclaiming systems in the metalliferous mining industry. It includes: identifying stockpile requirements; designing the stockpile configuration; and monitoring stockpile operations.

Application of the Unit

This unit is appropriate for those working in a management or technical specialist role, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify stockpile requirements	1.1. Access, interpret and apply ***compliance documentation*** relevant to the designing of stockpile formations and reclaiming systems 1.2. Identify ***stockpiling requirements*** 1.3. Evaluate economics and efficiency of the stock piling ***system*** and configuration to be used 1.4. Identify and implement statutory requirements for locating of plant and stockpile
2. Design stockpile configuration	2.1. Design ***stockpile configuration*** with appropriate drainage system 2.2. Design reclaim systems to match stockpile configuration 2.3. Match load mechanisms to stockpile requirements 2.4. Design and install dust control measures to ensure correct operations 2.5. ***Plan***, organise and supervise safety requirements associated with the operation and machine movements
3. Monitor stockpile operations	3.1. Instruct operators on the outcomes required including Occupational Health & Safety issues and safe work procedures 3.2. Monitor stockpiling operation including surveying, forming, order or dumping, ramp 3.3. Monitor material removal from stockpile in accordance to Quality Assurance specifications 3.4. Assess and reconcile stock quantities

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to design stockpile formations and reclaiming systems:

- apply legislative, organisation and site requirements and procedures
- apply procedures for managing people and processes
- apply requirements for preparing capital equipment proposals
- apply procedures for analysing and reviewing stockpile operations and costs
- apply procedures for managing projects and tasks
- apply procedures for coordinating resources - human, financial and physical
- apply requirements for delivering and maintaining services to required specifications
- apply procedures for managing surface mining traffic
- apply procedures for managing equipment and maintenance systems
- apply techniques for evaluating new and used equipment
- apply operating costs control requirements
- apply procedures for gaining statutory/legal approvals
- apply tender specifications preparation requirements
- apply contract negotiation and finalisation techniques and requirements
- access and use technologies
- apply requirements for preparing and presenting management reports
- apply procedures for negotiating with internal/external customers, community and statutory/legal authorities
- apply conflict resolution techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to design stockpile formations and reclaiming systems:

- metalliferous mine operations
- metalliferous mine products and services
- stockpile design
- stockpile configuration
- reclaim systems design and configuration
- team management
- quality system

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- development, administration and review of procedures that apply to the system
- stockpile formation and reclaiming systems' design and functionality
- statutory control
- organisational objectives
- surveying
- risk management: principles, strategies and applications
- customer/client relations
- environmental management
- OHS
- computer applications
- negotiation techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the design of stockpile formations and reclaiming systems • implementation of procedures and techniques for the safe, effective and efficient design of stockpile formations and reclaiming systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the design of stockpile formations and reclaiming systems • consistent successful design of stockpile formations and reclaiming systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the design of stockpile formations and reclaiming systems
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the design of stockpile formations

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	and reclaiming systems • provision of clear and timely required support and advice on the implementation of stockpile formations and reclaiming systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Stockpiling requirements may include:	• heap leaching surge stocking • storage bins • storage of finished products (concentrate) • loading bay storage
System may be defined as:	• comprising policy, standards, procedures and tools/protocols
Stockpile configurations may include:	• sprinkler systems to keep stockpiles damp to control dust • sprinkler systems for leach gold extraction • method of storing • method of loading • end use size • site modification • access to and from stockpile • material, size, shape • amount to be stored • weather conditions • stockpile floor • segregation • safety of area • reconciliation of stocks/transfers • stockpile identification • reporting
Planning would typically include:	• interpreting and communicating information • surveying

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	• infrastructure/technology requirements and would typically incorporate the following specifications:
	  • products
	  • production rate
	  • recyclable materials
	  • stack emissions
	  • hours per week of operation
	  • waste and stockpiles
	  • water/tailings management
	  • transportation systems
	• all weather development drives and openings

Unit Sector(s)

Stockpile and Reclaim Material

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISRM601A Establish and maintain the stockpile management system

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishing and maintaining of stockpile management systems in the coal and metalliferous mining and extractive industries. It includes: identifying and researching the requirements; facilitating the designing of systems, selection of equipment, installation and commissioning procedures, systems for the operation and maintenance; and establishing systems for audit and review of the systems.

Application of the Unit

This unit is appropriate for those working in management or technical specialist role, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and research requirements	1.1. Access, interpret and apply ***compliance documentation*** relevant to stockpile management systems 1.2. Analyse and document organisation goals, objectives and strategies in relation to the establishment of the management system 1.3. Investigate and analyse worksite environments to develop options, strategies and anticipated outcomes 1.4. Develop and implement strategies that translate the objective into the planning process
2. Facilitate the design of system	2.1. Ensure the requirements for and the purpose of stockpile management systems are identified in accordance with legislative requirements 2.2. Ensure specifications for stockpile systems are developed from a comprehensive analysis of site requirements 2.3. Ensure system options are identified from an analysis of all relevant technical, operational and financial information 2.4. Ensure the economics and efficiency of the ***stockpiling system and configuration*** to be used is evaluated
3. Facilitate the selection of equipment for the management systems	3.1. Ensure the requirements for and the purpose of stockpile equipment is identified against systems requirements 3.2. Ensure a detailed scoping of the work requirement is conducted, and that key selection criterion, including ***hazard*** identification and ***risk*** analysis, is developed 3.3. Ensure a specification for the required stockpile equipment is developed 3.4. Ensure the preferred equipment solutions are selected on the basis of performance against specification requirements
4. Facilitate installation and commissioning procedures	4.1. Ensure a procedure to identify hazards and analyse and evaluate risks associated with the installation of stockpiling systems and

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	equipment is developed and implemented 4.2. Ensure the integration of new and existing systems and processes is planned and prepared to achieve optimum performance 4.3. Ensure safe operating procedures and rules are developed from a detailed analysis of site requirements 4.4. Ensure procedures for installing and commissioning stockpile systems and equipment are developed and implemented 4.5. Ensure a program to satisfy identified stockpiling training requirements is implemented 4.6. Ensure emergency response and evacuation systems, plans and procedures are implemented
5. Facilitate the implementation of plans for the operation and maintenance of the systems	5.1. Ensure operational procedures for stockpile systems and equipment are developed from legislative and organisation's requirements and are incorporated into site documentation 5.2. Ensure maintenance procedures for stockpile systems and equipment are developed from legislative and organisation's requirements and are incorporated into site documentation 5.3. Ensure procedures for reviewing and modifying work processes are developed and implemented
6. Establish systems for audit and review of systems	6.1. Establish procedures to evaluate and confirm system/equipment compliance with statutory and site requirements 6.2. Ensure future stockpile systems and equipment requirements identified and assessed and incorporate into planning processes 6.3. Ensure procedures to confirm the currency and compliance of stockpile maintenance and safety standards are developed and implemented 6.4. Ensure the system for recording and reporting of stockpile and equipment information is developed and implemented 6.5. ***Audit*** the stockpile training program for

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	currency and relevance 6.6. Ensure procedures for incorporating feedback into the audit/review system are developed and implemented 6.7. Audit emergency response and evacuation systems, plans and procedures for compliance with site requirements 6.8. Ensure procedures for response to instances of non- compliance or other discrepancies/deficiencies revealed by audit are developed and implemented

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain the stockpile management system:

- apply legislative, organisation and site requirements and procedures
- apply procedures for designing and implementing stockpile configurations
- apply procedures for monitoring and maintaining stockpile operations
- apply techniques for managing people and processes
- apply requirements for preparing capital equipment proposals
- apply procedures for analysing and reviewing stockpile operations and costs
- apply procedures for managing projects and tasks
- apply procedures for coordinating resources, human, financial and physical
- apply procedures for delivering and maintaining services to required specifications
- apply worksite traffic management requirements and procedures
- apply procedures for managing equipment and maintenance systems
- apply techniques for evaluating new and used equipment
- apply operating cost control requirements and procedures
- interpret and comply with statutory requirements
- apply procedures for planning operations
- apply requirements for preparing tender specifications
- apply techniques for negotiating and finalising contracts
- access and use technologies
- apply requirements for preparing and presenting management reports
- apply techniques for negotiating with internal/external customers, community and statutory/legal authorities
- apply conflict resolution techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain the stockpile management system:

- risk management, principle, strategies and applications
- statutory control requirement
- safety and health requirements
- environmental management requirements
- quality system requirements

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- organisational objectives
- worksite plans and operations
- worksite products
- characteristics, uses and limitations of stockpile equipment
- stockpile configuration
- stockpile design
- training systems
- emergency response and evacuation planning processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing and maintaining of stockpile management systems • implementation of procedures and techniques for the safe, effective and efficient establishing and maintaining of stockpile management systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to establish and maintain stockpile management systems • consistent and timely establishing and maintaining of the stockpile management systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establish and maintain stockpile management systems
	  • consistent and timely gaining of approval of

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	stockpile management systems • provision of clear, timely required support and advice on the implementation of stockpile management systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazard is:	• a source or a situation with a potential for harm in terms of human injury or ill-health, damage to property, damage to the environment or a combination of these
Risk is:	• the combination of the frequency, or probability of occurrence and consequence of a specified hazardous event
Stockpile system and configurations may include:	• access to and from stockpile • amount to be stored • edge control • material, size, shape • method of loading/unloading • method of storing • reconciliation of stocks transfers • delivery to stockpile • withdrawal methods • blending requirements • operating method • level or volume monitoring • spontaneous combustion • automation • segregation • site safety requirements • reporting • safety of area • segregation

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	• site modification • sprinkler systems to keep stockpiles damp to control dust • stockpile floor • stockpile identification
Audit is:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives

Unit Sector(s)

Stockpile and Reclaim Material

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISTD201A Read and interpret maps

Modification History

Not applicable.

Unit Descriptor

This unit covers reading and interpreting maps in resources and infrastructure industries. It includes: preparing for navigation; planning the route; and conducting navigation.

Application of the Unit

This unit is appropriate for those working in a operational roles, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for navigation	1.1. Access, interpret and apply ***compliance documentation*** relevant to reading and interpreting maps 1.2. ***Information*** is gathered and relevant factors identified and checked with appropriate personnel 1.3. Suitable ***maps***, ***equipment*** and ***navigation aids*** are selected and checked for accuracy, currency and operational effectiveness 1.4. Faults or errors in maps and equipment are detected and corrected 1.5. Communication with others is established and maintained
2. Plan the route	2.1. Traverse route to destination is selected using information from map or plan and field observations 2.2. Maps are examined to identify relevant ***symbols and information*** and ***navigation data*** 2.3. Current position in the field is identified on map or plan 2.4. Current position in the field is located using landmarks and key geographical features. 2.5. Required destination is identified on map or plan 2.6. Hazards and potential hazards in traversing from location to destination are recognised and interpreted from map or plan, field observations, and local knowledge. 2.7. Distance to required destination is estimated using map scale and selected traverse route
3. Conduct navigation	3.1. Navigation is undertaken in accordance with planned route and schedule 3.2. Maps are correctly orientated to ***surroundings*** in accordance with planned route 3.3. Equipment and navigation aids are used correctly 3.4. Alternative routes are navigated to bypass

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	obstacles and improve efficiency of route or course

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to read and interpret maps:

- apply legislative, organisation and site requirements and procedures
- speak clearly and directly
- apply active listening
- access, interpret and apply technical and operational information, including: work instructions, quality assurance procedures, manufacturer's instructions, materials safety data sheets and equipment instructions
- apply teamwork to a range of situations, particularly in a safety context
- solve problems, such as: recognising clear discrepancies between available maps or other data and the actual site and taking action to correct these
- show initiative in adapting to changing work conditions or contexts, particularly when working across a variety of work areas
- manage time, particularly in organising priorities and planning work
- take responsibility for self organisation of work priorities
- use a range of mediums to learn
- apply mathematical skills, including: basic angles and geometry for compass bearings, estimation and measurement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to read and interpret maps:

- types of maps, charts and scales and their uses
- representation of topographic features on maps and plans
- common scales used on maps and plans
- features and use of a compass and factors that affect compass accuracy
- advantages and disadvantages of different map and chart types and sources of error
- techniques for estimating distance travelled

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for reading and interpreting maps • implementation of requirements, procedures and techniques for the safe, effective and efficient reading and interpreting of maps • working with others to read and interpret maps and meet all of the required outcomes • consistent timely reading and interpreting of maps that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical

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	resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or Australian first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand Australian testimonial evidence of the candidate:
	  • working with others to read and interpret maps

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Information may include:	• details of local inhabitants, type of terrain or features of the route, access and exit routes, natural protection or shelter, land management and legislative requirements, guide books
Maps may include:	• cadastral and topographic maps, charts, guide books, aerial photographs, sketches and cave maps, and diagrams
Equipment may include:	• compass, track and survey markers, beacons, personal protective equipment and clothing, GPS units
Navigation aids may include:	• track and creek junctions and crossings, survey markers, beacons, track markers, cairns, paths, signs, arrows, compass and man-made objects or features
Symbols and information may include:	• grid lines and numbers, contour lines, magnetic variation, scale, map legend, topographic features, markers and beacons, water depth
Navigation data may include:	• grid reference points, grid and magnetic bearings, distances, estimated travelling times, height gain/loss, gradient, identifiable features and exit routes
Surroundings may include:	• ground/terrain, bodies of water, beacons and markers, natural formations, landmarks and man-made features
Obstacles may include:	• thick vegetation, drops and climbs, marshes and bogs, fog, rivers, lakes and dams, tides

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	and hazards

Unit Sector(s)

Sampling, Testing and Data Processing and Recording

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISTD202A Collect routine site samples

Modification History

Not applicable.

Unit Descriptor

This unit covers the collection of routine site samples in resources and infrastructure industries. It includes the requirements for the preparation for sampling, conducting sample collection; preparing samples, dispatching samples and maintaining the sampling environment.

Application of the Unit

This unit is appropriate for those working in production operator, field assistant and laboratory assistant roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining
- Mineral exploration

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for sampling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the collection of routine site samples 1.2. Confirm the purpose, priority and scope of the ***sample*** request or plan 1.3. Liaise with relevant personnel to arrange site access and all necessary clearances/permits 1.4. Identify ***site hazards*** and review enterprise ***safety procedures*** 1.5. Use and document procedures to ensure ***representative sampling*** 1.6. Confirm quantity, location, frequency or time of sampling and ***types of samples*** to be collected 1.7. Assemble required ***sampling tools and equipment***
2. Conduct sample collection	2.1. Collect samples as specified in sample request or plan 2.2. Preserve sample integrity throughout collection 2.3. Place samples in suitable containers and label accurately 2.4. Store and transport samples 2.5. Identify and record characteristics of sampling environment, in particular any non-standard aspects 2.6. Maintain sampling equipment in a clean and safe working condition
3. Prepare samples	3.1. Verify sample, check documentation and required equipment for preparation 3.2. Perform ***sample preparation*** according to plan using recommended procedures 3.3. Contain loss of material and protect sample against contamination 3.4. Recover and clean samples using techniques and equipment specified for the particular sample 3.5. Store or dispose of residues and samples following OHS and environmental

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	guidelines
4. Prepare samples for dispatch	4.1. Label, store and transport core samples to ***maintain integrity of sample*** 4.2. Use appropriate reference materials, standards and controls 4.3. Contain loss of material and protect sample against contamination 4.4. Document any change to preparation methods 4.5. Forward samples for analysis to external laboratories 4.6. Store, test and dispose of samples
5. Maintain a safe work environment	5.1. Use established work practices and personal protective equipment to ensure personal safety and that of others 5.2. ***Minimise environmental impacts*** of sampling and generation of waste 5.3. Dispose of all waste in accordance with enterprise procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to collect routine site samples:

- apply legislative, organisation and site requirements and procedures
- apply established work practices
- wear personal protective equipment
- apply plan, report, map, specification interpretation skills
- apply record maintenance and operations monitoring procedures
- apply worksite communication procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to collect routine site samples:

- key terminology and concepts, such as: sample, contamination, traceability, integrity, chain of custody
- purpose for which the samples have been collected
- the function of key sampling equipment/materials and principles of operation
- hazards, risks and enterprise safety procedures associated with routine sampling is undertaken
- enterprise procedures dealing with:
  - sampling
  - waste management, clean up and spillage
  - handling, transport and storage of dangerous goods
- health, safety and environment requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the collection of routine site samples • implementation of requirements, procedures and techniques for the safe, effective and efficient collection of routine site samples • working with others to undertake and complete the collection of routine site samples that meets all of the required outcomes • consistent timely completion of the collection of routine site samples that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the collection of routine site samples

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Samples may include:	• soils • rocks • minerals • fossils • hydrocarbons • drill core • stream sediment • mine samples • gas or air samples • water, wastewater, stormwater, sewage, sludges • construction materials • solid wastes • raw materials • final products • hazardous materials and/or dangerous goods • atmospheric or airborne contaminants
Site hazards may include:	• solar radiation, dust and noise • wildlife, such as snakes, spiders, domestic animals • biohazards, such as micro-organisms and agents associated with soil, air, water • chemicals, such as acids and hydrocarbons • sharps, broken glassware • manual/handling of heavy sample bags and containers

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	• crushing, entanglement, cuts associated with moving machinery and hand tools • falling objects, uneven surfaces, heights, slopes, wet surfaces, trenches, confined spaces • vehicle handling in rough terrain, boat handling in rough or flowing water
Safety procedures may include:	• use of materials safety data sheets (MSDS) • use of personal protective equipment, such as hard hats, heavy protection, gloves, safety glasses, goggles, faceguards, coveralls, gown, body suits, respirators, safety boots • correct labelling of hazardous materials • handling and storing hazardous material and equipment in accordance with labels, MSDS, manufacturer's instructions, enterprise procedures and regulations • regular cleaning and/or decontamination of equipment • machinery guards • signage, barriers, service isolation tags, traffic control, flashing lights • lockout and tagout procedures
Representative sampling may include:	• size • frequency • location
Types of samples may include:	• grab samples • disturbed or undisturbed materials • composite samples, such as time, flow proportioned, horizontal/vertical cross section • quality control samples, such as controls, background, duplicate, blanks
Sampling tools and equipment may include:	• hand tools • carrying devices • portable power tools • front-end loader, backhoe, excavator, drill rig • shovels, augers, bucket • sampling frames, sampling tubes, dip tubes, spears, flexible bladders, syringes • access valves • sample thief • weighted sample bottles, bottles, plastic/metal containers and disposable buckets • sterile containers, pipettes, inoculating loops,

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	disposable spoons • pumps, stainless steel bailers • mechanical gravity separator • high specific gravity liquids • hand magnet • isodynamic magnetic separator • electrostatic separator • crusher • ultrasonic cleaner • panning and hand jigging • hydraulic rock splitter • diamond saw • sledge hammer • crushers • screens
Sample preparation may include:	• marking up • splitting • sub-sampling • sealing • size reduction • specific gravity • magnetic suspension • core-cutting • crushing/grinding • sieving • riffling • blending • homogenisation • coning • quartering • preparing sub-sample including: stain/polish • petrological and electron microscope/electron microprobes
Maintenance of integrity of samples could include:	• appropriate containers and lids (for example, glass, plastic, amber, opaque) • sealing of sample containers • purging of sample lines and bores • decontamination of sampling tools between collection of consecutive samples • use of appropriate preservatives (for example, sodium azide, toluene or antibiotics) • wrapping container in foil or wet newspaper

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	• temperature control, which may involve prevention of direct contact between the sample and coolant • transfer of sterile sample into sterile container • monitoring of storage conditions • enterprise/legal traceability through appropriate sample labelling and records
Minimising environmental impacts may involve:	• replacement of soils and vegetation • driving to minimise soil erosion and damage to fauna and vegetation • disposal of surplus, spent or purged materials • recycling of non-hazardous wastes • appropriate disposal of hazardous waste • cleaning of vehicles to prevent transfer of pests and contaminants

Unit Sector(s)

Sampling, Testing and Data Processing and Recording

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISTD301A Take environmental samples and measurements

Modification History

Not applicable.

Unit Descriptor

This unit covers taking of environmental samples and measurements in resources and infrastructure industries. It includes: collecting environmental samples; take readings and measurements; coordinating with scientists and laboratories; maintain sampling and measurement equipment; and reporting, storing and archiving environmental data.

Application of the Unit

This unit is appropriate for those working in operational or technical roles, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Collect environmental samples	1.1. Access, interpret and apply ***compliance documentation*** relevant to taking of environmental samples and measurements 1.2. Collect environmental ***samples*** as specified in environmental management system 1.3. Preserve sample integrity throughout collection 1.4. Place samples in suitable containers and labels accurately 1.5. Identify and record characteristics of sampling environment, in particular any non-standard aspects
2. Take readings and measurements	2.1. Set up ***measurement equipment*** in accordance with Australian standards 2.2. Take ***measurements*** in accordance with environmental management system requirements 2.3. Take accurate ***readings*** and document at time of reading to avoid error
3. Coordinate with scientists and laboratories	3.1. Provide information clearly and accurately 3.2. Provide for delivery of samples within required time constraints 3.3. Ensure integrity of sample is maintained during packing and transport 3.4. Act promptly upon receiving feedback from laboratories where environmental risk is identified
4. Maintain sampling and measurement equipment	4.1. Maintain equipment in specified operating condition 4.2. Calibrate equipment in accordance with maintenance schedule 4.3. Perform minor repairs and adjustments where authorised 4.4. Program equipment software accurately where authorised
5. Report, store and archive environmental data	5.1. Prepare regular reports in accordance with environmental management system 5.2. Store data accurately in manual and computer systems

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	5.3. Ensure data are backed up regularly

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to take environmental samples and measurements:

- apply legislative, organisation and site requirements and procedures
- apply procedures for accurate recording of data
- use computers
- apply databases and spreadsheets
- set up measuring equipment
- apply procedures for packing and transporting environmental samples
- apply equipment calibration requirements and procedures
- apply equipment software programming requirements and procedures
- apply statistical report preparation procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to take environmental samples and measurements:

- local mine operations environmental management system related to samples and measurements
- methods for retaining sample integrity
- common readings and measured expected
- relevant company procedures and policy
- sampling and measurement equipment operations
- company and statutory reporting requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for taking environmental samples and measurements • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of environmental samples and measurements • working with others to take environmental samples and measurements that meet all of the required outcomes • consistent timely completion of environmental sampling and measurement that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to take environmental samples and measurements

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Samples may include:	• air and airborne dust • aerosols • sediment • rock • process streams • water • ground water • soil • noise
Sampling and measurement equipment may include:	• passive air samplers • low and high volume air samplers • water pumps samplers • personal air samples • photometric dust measuring equipment • gas liquid chromatographic analytical equipment
Measurements and **readings** may include:	• air velocity • flow rate • composition • temperature • humidity • barometric pressure • dust concentration and composition • water velocity • flow rate

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	• composition • temperature

Unit Sector(s)

Sampling, Testing and Data Processing and Recording

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIISTD302A Process data and maintain accurate records

Modification History

Not applicable.

Unit Descriptor

This unit covers processing data and maintaining accurate records in resources and infrastructure industries. It includes using and maintaining data, analysing and presenting data, and maintaining accurate records.

Application of the Unit

This unit is appropriate for those working in operational or technical roles, within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Use and maintain data	1.1. Access, interpret and apply ***compliance documentation*** relevant to processing data and maintaining accurate records 1.2. Use available computer technologies according to organisation licensing, manufacturers' specifications and local procedures 1.3. Identify and code ***data*** suitable for database system 1.4. Check and verify computer output 1.5. Utilise suitable and appropriate ***software*** to store and retrieve data 1.6. Transfer data effectively
2. Analyse and present data	2.1. Record accurate and relevant observations in a form accessible to others 2.2. Use appropriate ***conventions and symbols*** 2.3. Convert instrument readouts into a form suitable for interpretation 2.4. Use computer technology to analyse data 2.5. Present results in format that meets organisational standards
3. Maintain accurate records	3.1. Document and update ***records***, procedures and techniques 3.2. File and store information

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to processing data and maintaining accurate records:

- apply legislative, organisation and site requirements and procedures
- apply procedures for entering data into computer software
- apply data analysis techniques
- apply averaging techniques
- apply report writing requirements and procedures
- apply computer software report prepare requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to processing data and maintaining accurate records:

- regulatory, organisational and site data processing and record maintenance requirements and procedures
- computer software (database, spreadsheet, word processing)
- data presentation modes
- filing systems
- storage methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for processing data and maintaining accurate records • implementation of requirements, procedures and techniques for the safe, effective and efficient processing of data and maintenance of accurate records • working with others to process data and maintain accurate records that meet all of the required outcomes • consistent timely completion of processing data and maintaining of accurate records that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency.
	The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to process data and maintain accurate records

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Data may include:	• results of tests • measurements and analyses • computer database information • manual notes • maps • sketches • diagrams
Software may include:	• database software • spreadsheet software • statistical analysis software
Conventions and symbols may be used on:	• overlays • maps • reports ***and includes***: • scientific notation • terminology • references
Records may include:	• equipment • materials • safety • budgets • test results • product/process testing • calibrations of equipment • maintenance history of equipment

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	• warranty information • manufacturer's manuals • OHS events • expenditure • file and sample locations

Unit Sector(s)

Sampling, Testing and Data Processing and Recording

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUMM201A Install ground support

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of ground support in the metalliferous mining industry. It includes planning and preparing for operations, installing ground support, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift change over details 1.4. Select appropriate personal protective equipment 1.5. Select appropriate type of ***equipment***, safety equipment and ground control materials according to job type, work plan and ***site conditions*** 1.6. Arrange for delivery of ground support materials to site 1.7. Inspect and assess site conditions to determine if scaling is required and take action 1.8. Conduct ***equipment*** pre-start checks to ensure equipment is ready for operation 1.9. Identify, address and report potential risks and hazards 1.10. Inspect and assess appropriateness of ground control mechanism/plan to ensure safety of site 1.11. Use approved ***dust suppression and extraction equipment and/or methods***
2. Install ground support	2.1. Assemble and install ***reinforcement components*** according to ground control plan 2.2. Install ***reinforcement components*** with appropriate ***fixative*** 2.3. Install ***reinforcement components*** following contour of ground and according to ground conditions 2.4. Tension external ***reinforcement components*** according to ground control conditions
3. Conduct housekeeping activities	3.1. Complete all required documentation clearly, concisely and on time 3.2. Clean ***equipment*** to maintain condition and ensure safe and efficient operations

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	3.3. Pass on end-of-shift information to oncoming shift

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install ground support:

- apply legislative, organisation and site requirements and procedures for the installation of ground support
- identify hazards
- monitor operations
- organise work tasks
- report defects
- perform troubleshooting
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install ground support:

- environmental procedures
- equipment safety requirements
- geological and technical data (basic)
- ground control characteristics and applications
- hazardous substances (handling and transport)
- inspection procedures
- isolation procedures
- manufacturer's specifications
- operational procedures and checks
- working at heights

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing ground support • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of ground support installation • working with others to undertake and complete the installation of ground support that meets all of the required outcomes • consistent timely completion of ground support installation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the ground support installation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Equipment may include:	• power tools and hand tools • bolt cutters • lifting and handling equipment • lighting • support vehicles • recommended/required PPE
Dust suppression and extraction equipment and/or methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site • hoses • portable air fan (air mover)
Reinforcement components may include:	• ground anchors • rock-bolts • expansion shells • plates • nuts and washers • other approved components used for ground control • butterfly bars • plates • rope • steep straps • wire
Fixatives may include:	• point anchors

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	• cement grout/resin • friction bolts • expansion • chemical anchor
Site conditions may include:	• accessibility • amount of scale • ground conditions(e.g. dry, wet) • ground stability (e.g. broken, blocky, flaky, stable, compacted) • location of water table • slope of working surface • ventilation characteristics (e.g. fumes, dust) • visibility

Unit Sector(s)

Metalliferous Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUMM202A Install and maintain vent

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation and maintenance of vents in the metalliferous mining industry. It includes planning and preparing for the installation of ventilations systems, installing and maintaining vents, removing vents, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
• Plan and prepare for the installation of ventilation systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift change over details 1.4. Select personal protective equipment appropriate for work activities 1.5. Inspect and assess site conditions to determine if scaling is required and take action 1.6. Select appropriate type of equipment according to job type and specifications 1.7. Perform ***equipment pre-start checks*** 1.8. Carry out start-up procedures 1.9. Identify, address and report potential risks and hazards 1.10. Communicate with other ***equipment*** operators and ***personnel*** using approved communication methods 1.11. Identify, address and report ***environmental issues*** 1.12. Adhere to emergency procedures 1.13. Use approved ***dust suppression and extraction methods*** 1.14. Ensure area is ventilated before entry into work area
2. Install and maintain vent	2.1. Isolate and lock out ventilation devices 2.2. Install and test catenary cable or secure to existing ground support mechanisms where appropriate 2.3. Hang and secure ventilation bag using site procedure 2.4. Check vent for correct operation and replace and/or adjust vent if required
3. Remove vent	3.1. Isolate and lock out ventilation devices 3.2. Loosen and disconnect vent support mechanisms 3.3. Remove ***vent*** whilst ensuring the ***safety of personnel*** and associated equipment and

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	services 3.4. Seal any reticulation system openings correctly to minimise entry of foreign material
4. Conduct housekeeping activities	4.1. Clean ***equipment*** 4.2. Clean and store auxiliary services equipment 4.3. Pass on end of shift information to oncoming shift 4.4. Complete all required documentation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install and maintain vents:

- apply legislative, organisation and site requirements and procedures for installation and maintenance of vents
- operate, maintain and clean equipment
- interpret ground conditions
- repair vent bags
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install and maintain vents:

- equipment parking
- equipment processes, technical capability and limitations
- geological and technical data (basic)
- isolation procedures
- operational procedures and checks
- primary and secondary ventilation
- site procedures
- start-up and shutdown procedures
- underground procedures
- ventilation systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing and maintaining vents • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of vent installation and maintenance • working with others to undertake and complete the installation and maintenance of vents that meets all of the required outcomes • consistent timely completion of vent installation and maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation and maintenance of vents

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Vents may be secondary or temporary and include fans.	
Pre-start checks may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • computer systems • display instrumentation and gauges (indicators, gauges, laser levels) • engine and stop engine lights (orange and red) • fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel, transmission) • no kinks • no leaks • no tears • vent bag affixed in position • visual and audio warning devices and lights
Equipment may include:	• 4WD • cutting implements • elevating work platform • hand and power tools • integrated tool carrier • light trucks • velcro • minsup clip • recommended/required PPE
Dust suppression and extraction	• mobile/fixed sprays

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methods may include:	• screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site • fans
Personnel may include:	• blasters • contractors • drillers • drivers • holders of appropriate tickets • licensed operators • maintenance staff • personnel authorised by mine management • service personnel • supervisors • surveyors • tradespersons
Legislation may include:	• Australian standards • environmental agencies regulations • Environmental Protection Act • isolation procedures • mine safety and health legislation and regulations • OHS legislation • lead code of practice
Environmental issues may include:	• dust • fumes • noise • water

Unit Sector(s)

Metalliferous Mining (Underground)

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIUMM203A Prepare and perform manual scaling operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation and performance of manual scaling operations in the metalliferous mining industry. It includes planning and preparing for manual scaling, performing manual scaling operations, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for manual scaling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify ***shift change-over details*** including ground conditions 1.4. Select personal protective equipment appropriate for work activities 1.5. Select scaling and ***ancillary equipment*** appropriate to the task 1.6. Ensure work area is ***ventilated***
2. Perform manual scaling operations	2.1. Inspect and assess ***site conditions*** to determine scaling requirements and starting point 2.2. Ensure equipment is safe and ready for use 2.3. ***Inspect*** and determine appropriateness of conducting manual scaling 2.4. Identify, manage and/or report ***hazards*** 2.5. Establish ***exclusion zone*** to prevent unauthorised access 2.6. Maintain a ***suitable working posture*** for manual scaling 2.7. Ensure maintenance of safe egress 2.8. Conduct manual scaling according to site procedures 2.9. Maintain services 2.10. Maintain ***dust controls*** as manual scaling operations advance
3. Conduct housekeeping activities	3.1. Clean and return ***ancillary equipment*** 3.2. Complete all required documentation to site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to prepare and perform manual scaling operations:

- apply legislative, organisation and site requirements and procedures for preparation and performance of manual scaling operations
- identify hazards
- work safely
- communicate effectively
- manually handle

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to prepare and perform manual scaling operations:

- environmental procedures
- equipment safety requirements
- ground conditions
- ground control methods
- dealing with misfires
- inspection procedures
- isolation procedures
- mining legislation
- emergency procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for preparing and performing manual scaling operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of manual scaling preparation and performance • working with others to undertake and complete the preparation and performance of manual scaling that meets all of the required outcomes • consistent timely completion of manual scaling operation preparation and performance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the preparation and performance of manual scaling operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Ancillary equipment may include:	• lighting • hoses water / air • lifting and handling equipment • mobile equipment (e.g. support vehicles) • paint (e.g. spray cans) • power tools and hand tools • scaling bars of various lengths • recommended/required PPE • work platforms (e.g. scissor lift, basket) • ventilation equipment
Ventilated means quality and quantity of air is suitable for the work environment according to site and legislative requirements.	
Dust controls may include:	• mobile/fixed sprays • ventilation • hand watering

Exclusion zone indicators may include:	• flags
	• tapes
	• witches hats
	• signs including:
	  • danger
	  • traffic control signs

Shift change-over details may include:	• equipment and resource allocations/requirements • ground conditions

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	• hazard reports • supervisor's instructions
Legislation may include Acts and regulation dealing with:	• mining safety and health • mine inspection • OHS • explosives
Site conditions may include:	• accessibility • ground conditions • ground stability (e.g. broken, blocky, flaky, stable, compacted, shears, faults, folds) • noise • ventilation • visibility • temperature, humidity
Hazards may include:	• ground control failure • lack of ventilation or oxygen • loose material on working surface • misfires • gases • entry by unauthorised personnel • uncovered open holes • unstable ground conditions • atmospheric contaminants • unstable footing • poor housekeeping
Inspections may include:	• visual inspection • sounding • watering • air flow • listening for rock noise (ground talking)
Suitable working posture may include:	• both feet on firm footing • holding bar in correct position • maintaining balance
Services may include:	• compressed air • water • ventilation

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Unit Sector(s)

Metalliferous Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUMM301A Conduct wet filling activities

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of wet filling activities in the metalliferous mining industry. It includes organising for wet filling, filling voids, and draining and monitoring fills. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise for wet filling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Select appropriate personal protective equipment 1.5. Select approved ***dust suppression and extraction methods*** 1.6. Select appropriate type of ***equipment***, materials and safety equipment according to job type 1.7. Perform equipment pre-start checks to ensure ***equipment*** is ready for operation 1.8. Identify, manage and/or report ***potential risks and hazards*** 1.9. Erect physical barricades and signs and/or safety provisions to prevent unauthorised entry of personnel and equipment 1.10. Manage environmental requirements 1.11. Adhere to emergency procedures to ensure safety of personnel, equipment and site 1.12. Inspect and assess site conditions to determine if scaling is required and take action according to site requirements 1.13. Ensure area is well ventilated before entry into work area
2. Fill ***voids***	2.1. Fill ***void*** in controlled manner according to characteristics of ***fill***
3. Drain and monitor ***fill***	3.1. Manage and monitor drainage system according to engineering specifications 3.2. Inspect bulkheads for ***faults***, ***water flow and/or defects*** 3.3. Monitor and manage dimensions of fill utilising approved indicators 3.4. Complete all required documentation clearly, concisely and on time 3.5. Pass on end of shift information to

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	oncoming shift

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct wet filling activities:

- apply legislative, organisation and site requirements and procedures for the conduct of wet filling activities
- identify hazards
- monitor filling
- apply safe work practices
- communicate with other personnel

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct wet filling activities:

- backfilling procedures
- emergency procedures
- equipment safety requirements
- hazardous substances (handling and transport)
- mine operational system
- mining legislation
- OHS procedures
- operational procedures and checks
- site safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of wet filling activities • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the conduct of wet filling activities • working with others to undertake and complete the conduct of wet filling activities that meets all of the required outcomes • consistent timely completion of the conduct of wet filling activities that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of wet filling activities

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Equipment may include:	• hand tools • LHD • slurry pump • recommended/required PPE
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Legislation may include Acts and regulation dealing with:	• mining safety and health • mine inspection • OHS • explosives
Potential risks and hazards may include:	• contaminants • faulty equipment • fumes • ground conditions (unstable) • high air and water pressures • high voltage electricity • hydraulic oil pressure • lack of ventilation • tripping hazards • unauthorised personnel
Fill may include:	• combination of wet and dry • paste • wet

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Bulk head faults and defects may include:	• cracks • dampness on bulk head • seepage • stress fractures
Void may include:	• bench • open stope
Fill methods may include:	• dumping over edge

Unit Sector(s)

Metalliferous Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUMM302A Install sets

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of sets in the metalliferous mining industry. It includes planning and preparing for operations, installing sets, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Select appropriate personal protective equipment 1.5. Select appropriate type of ***equipment***, safety equipment and ground control materials according to job type, work plan and ***site conditions*** 1.6. Conduct ***equipment*** pre-start checks to ensure ***equipment*** is ready for operation 1.7. Identify, manage and/or report potential risks and hazards according to work plan 1.8. Inspect and assess site conditions to determine if scaling is required and take action 1.9. Inspect and assess appropriateness of ground control mechanism to ensure safety of site 1.10. Use ***approved dust suppression and extraction equipment and/or methods***
2. Install sets	2.1. Install ***footings*** according to ground control design 2.2. Assemble ***sets*** utilising appropriate materials suiting ground conditions according to ground control design 2.3. Erect and secure sets according to spacing requirements 2.4. Install packing in voids to recommended tolerances 2.5. Cut and fit supports between ***sets***
3. Conduct housekeeping activities	3.1. Complete all required documentation clearly, concisely and on time 3.2. Clean ***equipment*** to maintain condition of equipment and ensure safe and efficient operations 3.3. Pass on end of shift information to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install sets:

- apply legislative, organisation and site requirements and procedures for installing sets
- cut and fit timbers
- cut and fix mesh
- identify hazards
- monitor operations
- organise work tasks
- report defects
- perform troubleshooting
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install sets:

- drilling procedures
- geological and technical data (basic)
- ground control characteristics and applications
- hazardous substances (handling and transport)
- manufacturer's specifications
- mining legislation
- operational procedures and checks
- footing installation techniques
- set assembly, erection and securing
- void packing techniques
- working at heights

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing sets • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of set installation • working with others to undertake and complete the installation of sets that meets all of the required outcomes • consistent timely completion of set installation that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of sets

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Equipment may include:	• power tools and hand tools • drilling equipment • lifting and handling equipment • lighting • support vehicles • recommended/required PPE
Dust suppression and ventilation equipment and/or methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site • fans
Footings may include:	• concrete • steel • timber • bed rock
Sets may include:	• concrete • multi-plate arch • steel • timber
Site conditions may include:	• accessibility • amount of scale • ground conditions (e.g. dry, wet) • ground stability (e.g. broken, blocky, flaky, stable, compacted) • location of water table

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	• slope of working surface • ventilation characteristics (e.g. fumes, dust) • visibility
Legislation may include Acts and regulation dealing with:	• mining safety and health • mine inspection • OHS • explosives

Unit Sector(s)

Metalliferous Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUMM303A Conduct hand held mining

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of hand held mining in the metalliferous mining industry. It includes planning and preparing for hand held mining, setting up hand held machines, carrying out hand held mining operations, and carrying out end-of-shift procedures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for hand held mining	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift change over details 1.4. Identify, manage and/or report ***risks and hazards*** 1.5. Select and use appropriate ***Personal Protective Equipment*** 1.6. Wash down and visually ***inspect work area*** to ensure safe access 1.7. Ensure work area is properly ventilated before entry and ensure area is free of dust and blasting fumes 1.8. Inspect and assess site conditions to determine if scaling is required and take action 1.9. Identify, inspect and clearly mark all exposed butts and misfires 1.10. Ensure that butts or remnants are made safe or report the occurrence 1.11. Inspect hand held drilling ***machinery and equipment*** for operational serviceability 1.12. Identify if breakthrough with drill-steel may occur and take appropriate action 1.13. Ensure that appropriate ***dust suppression and/or extraction equipment*** is prepared and ready for use 1.14. Adhere to emergency reporting and evacuation procedures
2. Set up hand held machine	2.1. Assemble hand held ***machine*** and connect services to machine 2.2. Perform hand held ***machine operational checks*** according to recommended operating procedures 2.3. Select location and positions hand held ***machine*** for drilling operations according to the drilling plan

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3. Carry out hand held mining operations	3.1. Conduct work safely and efficiently 3.2. Select appropriate drill steel and determine hole collar location 3.3. Drill holes in accordance with drilling plan 3.4. Continue to monitor condition of back, walls and floor 3.5. Monitor hand held ***machine*** and air-leg for efficient operation
4. Carry out end-of-shift procedures	4.1. Shutdown ***machine*** and disconnect services 4.2. Inspect ***machine*** for defects and damage, and report to appropriate persons 4.3. Remove ***equipment***, hoses or debris from the work area 4.4. Store machine and associated equipment and plant in a designated or safe location 4.5. Submit end-of-shift report

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct hand held mining:

- apply legislative, organisation and site requirements and procedures for the conduct of hand held mining
- identify hazards
- communicate
- monitor operations
- organise work tasks
- assemble machinery
- interpret work plan
- report defects
- perform troubleshooting
- use hand tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct hand held mining:

- controlling atmospheric contaminants
- house keeping
- rock drilling procedures and equipment
- equipment safety requirements
- ground control characteristics and applications
- hand held equipment and equipment faults
- drill steel types and selection
- inspection procedures
- isolation procedures
- operational procedures and checks
- explosives and their associated hazards
- emergency reporting and evacuation procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of hand held mining • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of hand held mining • working with others to undertake and complete the conduct of hand held mining that meets all of the required outcomes • consistent timely completion of hand held mining that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of hand held mining

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislation may include Acts and regulation dealing with:	• mining safety and health • mine inspection • OHS • explosives
Machinery and equipment may include:	• airleg assembly and accessories • hand held • rising feed • drill steels • bits • raise ladder • water hoses • air hoses • lubrication devices
Hand held machine operational checks may include:	• checking and testing machine controls • rockdrill chuck wear • lubricator and lubrication • secure nuts and bolts • water tubes • bridle pins • security of air and water connections • inspection of hoses and connections • oil flow from exhaust outlet
Personal Protective Equipment may include:	• lamp • safety helmet • eye protection • hearing protection

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	• protection from atmospheric contaminants (dust/oil mist) • hand protection • overalls with reflective strip • safety footwear
Rockdrill machine faults may include:	• drop in penetration rate • loss of water or water pressure • loss of rotation • loss of air or air pressure • loss of lubrication • loss of gauge on bit • clogged air or water tubes • broken water tube • water in airline • airleg problems (e.g. broken crows foot)
Unusable drill steels may include:	• bent • broken • blocked • blunt • without necessary gauge/diameter
Work area inspections may include:	• travel ways • footings/access/retreat • fumes or dust • ventilation air flow • ground conditions • breakthrough locations (if accessible) • misfires • services including firing cables • workplace explosive storage
Potential hazards and risks may include:	• insufficient illumination • falling rocks • fire/flames/ignition sources • premature explosion • atmospheric contaminants • faulty equipment • debris • insufficient ventilation • unauthorised persons • high air or water pressures • breaking hoses • stuck or broken drill steels

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	• drilling in butts • drilling into misfires
Site procedures may include:	• pre-start check • lock out and tagging procedures • clean up • blasting procedures and re-entry times • permit-to-work systems • safety equipment • use of personal protective equipment • communication and reporting procedures • emergency procedures
Dust suppression and/or extraction equipment may include:	• secondary fans (electric or compressed air) and ventilation bags • mobile or fixed sprays • ventilation doors or other vent devices • air movers and ventilation bags • use of water trucks • watering down site • wash down backs and blasted material
Conditions may include:	• ground conditions(blocky, faulted, secure) • floor stability (e.g. broken, blocky, flaky, stable, compacted) • slope of working surface • environmental conditions (e.g. hot, noisy, dry, wet) • visibility and illumination conditions

Unit Sector(s)

Metalliferous Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUMM304A Construct and maintain underground roads

Modification History

Not applicable.

Unit Descriptor

This unit covers the construction and maintenance of underground roads in the metalliferous mining industry. It includes planning and preparing for road construction and maintenance, constructing roads, maintaining roads, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for road construction and maintenance	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift change over details 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***equipment*** and materials according to job type and specifications to maximise efficiency and effectiveness of work activities 1.6. Perform ***equipment*** pre-start checks 1.7. Identify, address and report ***potential risks and hazards*** 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures as per site procedures 1.10. Inspect and assess site conditions to determine if scaling is required and take action 1.11. Use approved ***dust suppression and extraction methods*** 1.12. Erect signs or barricades and/or safety provisions 1.13. Ensure area is well ventilated before entry into work area
2. Construct roads	2.1. Prepare ***road surface*** and apply road ***material*** to meet planned road characteristics and engineering specifications 2.2. Construct road to conform with road design and location as specified by work plan 2.3. Check for and remove contaminants 2.4. Construct drains and water crossing points as appropriate for the removal of run-off and avoid accumulation of excessive water to minimise road damage 2.5. Ensure ***access ways*** are clear whilst constructing ***road***

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	2.6. Organise for excess ***road material*** to be removed 2.7. Suppress dust utilising approved method 2.8. Complete all required documentation clearly, concisely and on time 2.9. Pass on end of shift information to oncoming shift
3. Maintain roads	3.1. Maintain condition of ***roads*** to meet volume of traffic 3.2. Maintain effective ***drainage*** for the removal of excess water and ensure safe hauling surface
4. Conduct housekeeping activities	4.1. ***Check road*** ensuring site is serviceable 4.2. Carry out shutdown procedures 4.3. Service and make minor adjustments to ***equipment***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct and maintain underground roads:

- apply legislative, organisation and site requirements and procedures for construction and maintenance of underground roads
- use dumping techniques
- operate, maintain and clean equipment
- interpret ground conditions
- employ pushing techniques
- use hand and power tools
- observe driving regulations and rules
- use towing methods

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to construct and maintain underground roads:

- construction marking
- drainage construction methods
- drainage methods
- dumping procedures
- dust suppression techniques
- equipment parking
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data (basic)
- hauling procedures
- hazardous substances (handling and transport)
- isolation procedures
- manufacturer's specifications (equipment, materials)
- material placement procedures
- mining legislation
- operational procedures and checks
- primary and secondary ventilation
- road construction sequence and methods

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- road rules
- road stabilisation
- site procedures
- site safety requirements
- start-up and shutdown procedures
- towing procedures
- underground procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for constructing and maintaining underground roads • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of underground road construction and maintenance • working with others to undertake and complete the construction and maintenance of underground roads that meets all of the required outcomes • consistent timely completion of underground road construction and maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the construction and maintenance of underground roads

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Equipment may include:	• compactor • dust suppression equipment • grader • integrated tool carrier • loader • roller • trucks • water trucks • recommended/required PPE
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Road material may include:	• bitumen • concrete • emulsified oils • gravel • raise borer muck • road base aggregate • sand • select fill • stabilisers and other dust suppressants
Legislation may include Acts and regulation dealing with:	• mining safety and health • mine inspection • OHS

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	• explosives
Potential risks and hazards may include:	• contaminants (metals, steel rods, vehicles, chemical/physical) • drains • dropper pipes and firing lines • dust • failure to erect barricades and signage • fires • open holes • other equipment and personnel • slippery roads • spillage • unsafe ground
Environmental issues may include:	• dust • exhaust emissions • gas emissions • noise
Road may include:	• all main travel ways • cross cuts • ore body roads • road
Road surface may include:	• fill • flat bedrock • sand • sub-base
Road preparations may include:	• clearing • levelling • stripping
Access ways may include:	• drives and cross cuts
Drainage may include:	• berm • netting • ponds • pumping system • shoulder drains • side drains • sub soil drainage • sumps • T pieces
Checks on road may include:	• equipment removed from site • for loose material

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	• relevant personnel notified • surface checks • whether signage and/or barricades have been erected or taken down

Unit Sector(s)

Metalliferous Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUMM305A Install and remove a secondary fan

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation and removal of secondary fans in the metalliferous mining industry. It includes planning and preparing for the installation of secondary fans, installing and maintaining secondary fans, removing secondary fans, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the installation of secondary fan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Select personal protective equipment appropriate for work activities 1.5. Inspect and assess site conditions to determine if scaling is required and take action according to site requirements 1.6. Select appropriate type of ***equipment*** according to job type and specifications to maximise efficiency and effectiveness of work activities 1.7. Perform ***equipment*** pre-start checks 1.8. Carry out start-up procedures according to manufacturer's specifications and site procedures 1.9. Identify, address and report potential risks and hazards 1.10. Communicate with other equipment operators and ***personnel*** using approved communication methods according to site procedures 1.11. Identify, address and report ***environmental issues*** 1.12. Adhere to emergency procedures according to manufacturer's guidelines and site procedures 1.13. Use approved ***dust suppression and extraction methods*** 1.14. Ensure area is well ventilated before entry into work area according to site procedures
2. Install and maintain secondary fan	2.1. Isolate and lock out ventilation devices 2.2. Install and/or check secondary fan installation structure for soundness 2.3. Install and secure secondary fan using approved methods 2.4. Check secondary fan for correct operation

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	in accordance with maintenance schedule and replace and/or adjusts as required
3. Remove secondary fan	3.1. Isolate and lock out ventilation devices 3.2. Safely loosen and remove secondary fan whilst ensuring the safety of ***personnel*** and associated equipment and services in accordance with site procedures 3.3. Seal any reticulation system openings correctly to minimise entry of foreign material
4. Conduct housekeeping activities	4.1. Clean ***equipment*** 4.2. Clean and store auxiliary services equipment 4.3. Pass on end of shift information to oncoming shift 4.4. Complete all required documentation clearly, concisely and on time

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install and remove a secondary fan:

- apply legislative, organisation and site requirements and procedures for the installation and removal of secondary fans
- operate, maintain and clean equipment
- interpret ground conditions
- use hand/power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install and remove a secondary fan:

- working at heights
- equipment parking
- technical capability and limitations
- geological and technical data (basic)
- isolation procedures
- operational procedures and checks
- primary and secondary ventilation
- site procedures
- start-up and shutdown procedures
- underground procedures
- maintenance schedules
- types of secondary fans
- installation and removal methods for secondary fans

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing and removing a secondary fan • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of secondary fan installation and removal • working with others to undertake and complete the installation and removal of a secondary fan that meets all of the required outcomes • consistent timely completion of secondary fan installation and removal that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation and removal of secondary fans

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Secondary fan is any ventilation system other than the primary ventilation system, and may include:	• air movers • screamers • booster • exhaust
Secondary fan installation checks may include:	• air filter restriction indicator • computer systems • display instrumentation and gauges (indicators, gauges, levels) • vibration • correct alignment • visual and audio warning devices and lights • types of fans • power source connection
Equipment may include:	• 4WD • cutting implements • elevating work platform • hand tools • integrated tool carrier • light trucks • recommended/required PPE
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site

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Personnel may include:	• blasters • contractors • drillers • drivers • holders of appropriate tickets • licensed operators • maintenance staff • personnel authorised by mine management • service personnel • supervisors • surveyors • tradespersons
Legislation may include Acts and regulation dealing with:	• mining safety and health • mine inspection • OHS • explosives
Environmental issues may include:	• dust • fumes • noise • water

Unit Sector(s)

Metalliferous Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUMM306A Conduct mechanical scaling

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of mechanical scaling in the metalliferous mining industry. It includes planning and preparing for ground control provisions, performing mechanical scaling operations, shutting down equipment, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for ground control provision	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify ***shift changeover details*** including relevant geo technical details 1.4. Select personal protective equipment appropriate for work activities 1.5. Ensure work area ventilation is adequate 1.6. Inspect and assess ***site conditions*** to determine scaling requirements and starting point 1.7. Select appropriate type of safety equipment and ***scaling equipment*** according to job type, work plan and site conditions 1.8. Conduct equipment pre-start checks to ensure equipment is safe and ready for use 1.9. Arrange for delivery of scaling equipment to site if necessary 1.10. Identify, address and report potential risks and ***hazards*** 1.11. Inspect and assess appropriateness of conducting mechanical scaling 1.12. Erect ***barricades*** to prevent unauthorised access if necessary
2. Perform mechanical scaling operations	2.1. Ensure equipment is stabilised and in the correct position. 2.2. Identify and manage misfires according to site procedures 2.3. Ensure services (air, water) are connected according to site procedures 2.4. Perform scaling according to site procedures 2.5. Continually inspect and assess site conditions to determine scaling requirements 2.6. Extend services as required 2.7. Use ***dust suppression methods*** as scaling operations advance 2.8. Adhere to emergency procedure in

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	accordance with site requirements 2.9. Ensure maintenance of safe egress 2.10. Complete all required documentation clearly, concisely and on time 2.11. Pass on end of shift information to oncoming shift
3. Shutdown equipment	3.1. Conduct shutdown procedures according to manufactures and site procedures
4. Conduct housekeeping activities	4.1. Clean equipment and work area 4.2. Clean and store ancillary service equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct mechanical scaling:

- apply legislative, organisation and site requirements and procedures for the conduct of mechanical scaling
- apply operating techniques
- use hand and power tools
- identify hazards
- communicate effectively

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct mechanical scaling:

- dewatering procedures and characteristics
- drilling procedures
- environmental procedures
- equipment safety requirements
- geological and technical data (basic)
- ground control characteristics
- hazardous substances (handling and transport)
- inspection procedures
- isolation procedures
- manufacturer's specifications
- mining legislation
- operational procedures and checks
- site emergency procedures
- start-up and shutdown procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of mechanical scaling • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the conduct of mechanical scaling • working with others to undertake and complete mechanical scaling that meets all of the required outcomes • consistent timely completion of mechanical scaling that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of mechanical scaling

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures including:
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Shift change-over details may include:	• equipment and resource allocations/requirements • geo technical details • site drawings • type of ground control mechanisms • pre shift instructions
Site conditions may include:	• limited accessibility • ground conditions (e.g. dry, wet) • ground stability (e.g. broken, blocky, flaky, stable, compacted, shears, faults, folds) • ground characteristics (high/low stress) • location of water table • noise • slope of working surface • ventilation characteristics • limited visibility • temperature, humidity
Scaling equipment may include:	• development drill rigs • mechanical ground support installation rigs • gate-end panel (jumbo box) • power tools and hand tools and attachments • services - air, water, electricity

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	• recommended/required PPE
Hazards may include:	• ground control failure • lack of ventilation • loose material on working surface • misfires • gases • entry by unauthorised personnel • uncovered open holes • unstable ground conditions • airborne dust and fibres • unstable footing • poor housekeeping

Barricades may include:	• flags
	• signs
	• tapes
	• witches hats
	• signs including:
	  • danger
	  • height
	  • no unauthorised entry
	  • stockpile numbering
	  • traffic control signage

Dust suppression methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • ventilation bags • watering down site • fans

Unit Sector(s)

Metalliferous Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUMM307A Maintain underground stockpiles

Modification History

Not applicable.

Unit Descriptor

This unit covers the maintenance of underground stockpiles in the metalliferous industry. It includes organising for stockpiling, stockpiling materials, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous Mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise for stockpiling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Select personal protective equipment appropriate for work activities 1.5. Inspect and assess site conditions to determine if scaling is required and take action 1.6. Identify, address and report ***potential risks and hazards*** 1.7. Identify, address and report ***environmental issues*** 1.8. Adhere to emergency procedures in case of fire and/or accident 1.9. Use approved dust ***suppression and extraction methods*** 1.10. Ensure area is well ventilated before entry into work area
2. Stockpile materials	2.1. Ensure ***stockpile*** site has adequate ground support and is accessible 2.2. Place ***stockpile materials*** in correct location to ensure efficient identification and access and to prevent mixing of materials 2.3. Operate ***equipment*** according to manufacturer's instructions and avoid damaging to the stockpile and surrounding site 2.4. Use appropriate stockpiling techniques to maximise the capacity of the stockpiling site 2.5. Identify and remove ***contaminants*** 2.6. Complete all required documentation clearly, concisely and on time 2.7. Pass on end of shift information to oncoming shift
3. Conduct housekeeping activities	3.1. Clean ***equipment*** to maintain condition of equipment and ensure safe and efficient

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	operations 3.2. Clean and store auxiliary service equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to maintain underground stockpiles:

- apply legislative, organisation and site requirements and procedures for the maintenance of underground stockpiles
- use driving techniques
- use dumping techniques
- operate, maintain and clean equipment
- interpret ground conditions
- employ lifting techniques
- employ pushing techniques
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to maintain underground stockpiles:

- drainage processes
- dumping procedures
- equipment parking
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data (basic)
- hauling procedures
- incline and decline rules
- isolation procedures
- material placement procedures
- mining regulations
- operational procedures and checks
- primary and secondary ventilation procedures
- principles of contamination
- signage erection procedures
- site procedures
- start-up and shutdown procedures
- stockpiling characteristics and limitations

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- stockpiling procedures
- underground procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for maintaining underground stockpiles • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of maintaining underground stockpiles • working with others to undertake and complete the maintenance of underground stockpiles that meets all of the required outcomes • consistent timely completion of underground stockpile maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the maintenance of underground stockpiles

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Equipment may include:	• bins • conveyors • dozers • dust suppression equipment • feeders • gates • magnets • ploughs • reclaimers • samplers • shovels • stackers • trucks • weighers • recommended/required PPE
A stockpile may be temporary or permanent and may be:	• a hole • back fill • formation of earthworks • pass • stope • tailings dams
Contaminants may include:	• leaching into water table • mixing of incompatible grades of ore • cigarette butts • consumables • ear plugs

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	• metal bucket teeth • metal or steel rods • old fencing • old piping • plastic • timber • wet fill
Stockpile materials may include:	• backfill • bricks • cement • dilution material • gangue • mineralised waste • mullock • rehabilitation soils and other materials (clay bands, gravel) • road base • sand • secondary material • various grades of ore
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Legislation may include Acts and regulation dealing with:	• mining safety and health • mine inspection • OHS • explosives
Potential risks and hazards may include:	• brake and steering failure • not following safety precautions near an open stope • tipping hazards • unauthorised personnel, contaminants
Environmental issues may include:	• dust • fumes noise • water

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Unit Sector(s)

Metalliferous Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND201A Install, maintain and recover reticulation systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation, maintenance and recovery of reticulation systems in the resources and infrastructure industries. It includes planning and preparing for installation of reticulation systems, installing and recovering service pipes, and carrying out ongoing maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for installation of reticulation system	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work for installation of ***reticulation systems*** according to site procedures and relevant legislation 1.3. Obtain, interpret and clarify/confirm ***work requirements*** before proceeding 1.4. Access and apply ***safety information*** (***OHS***) ***and procedures*** throughout the work 1.5. Inspect and assess site conditions to determine if scaling is required and take action according to site requirements 1.6. Select and prepare ***materials*** required for task 1.7. Communicate with other personnel and coordinate work activities with others prior and during operation 1.8. Identify, address and report potential hazards, risks and ***environmental issues***, *and* adhere to emergency procedures 1.9. Use approved ***dust suppression and extraction methods*** 1.10. Ensure area is well ventilated before entry into work area
2. Install and recover service pipes	2.1. Install service pipe support systems according to site procedures and standards 2.2. Carry out isolation, tagging and re-energising procedures 2.3. Install and stabilise service pipes according to site procedures and standards 2.4. Inspect and test installation to ensure functionality, safety and compliance with specifications 2.5. Connect/recover supply to service pipes
3. Carry out ongoing maintenance	3.1. Inspect and assess site conditions to determine if ***cable support systems*** are required and take action 3.2. Report on maintenance requirements 3.3. Clean and store equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to install, maintain and recover reticulation systems:

- apply legislative, organisation and site requirements and procedures for installation, maintenance and recovery of reticulation systems
- apply operational safety requirements
- access, read, interpret and apply technical information
- install, maintain and recover equipment and materials
- identify defects and damage
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to install, maintain and recover reticulation systems:

- legislative requirements for air/water systems
- operational safety requirements
- mine operational procedures
- lifting techniques
- signalling procedures
- site environmental requirements and constraints related to water/air services
- site procedures
- start-up and shutdown procedures
- underground procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installation, maintenance and recovery of reticulation systems • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installation, maintenance and recovery of reticulation systems • working with others to undertake and complete the installation, maintenance and recovery of reticulation systems that meet all of the required outcomes • consistent timely completion of installation, maintenance and recovery of reticulation systems that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation, maintenance and recovery of reticulation systems

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative including Acts and regulations dealing with:
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	  • environment
	• organisational and site requirements and procedures
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Reticulation system may include:	• air • dropper manifold • junction • pump lines • sand fill • water (waste, fresh) • hanging ventilation duct • facility for isolation
Work requirements may include:	• the nature and scope of work • equipment and plant, including any defects • achievement targets • related work activities • routes/plans • sequencing • working conditions • hazards • potential hazards • coordination requirements/issues
Safety information (OHS) and	• legislation and regulations

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procedures may include:	• relevant Australian standards • management plans • OHS policy • code of practice • manufacturer's instructions • safe working procedures (or equivalents) • recognised standards
Materials may include:	• pipes • hoses • hydraulic hoses • clamps • hand tools • chains • rope • nylon straps • taps • fire hydrants • valves • hanging and support materials
Environmental issues may include:	• dust/fumes • leakage of service • noise • water
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Cable support systems may include:	• chains • extended wire • hanger brackets • hanger bull halls • slings

Unit Sector(s)

Underground Mining

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND202A Operate from elevated work platform underground

Modification History

Not applicable.

Unit Descriptor

This unit covers operation from elevated work platforms underground in the resources and infrastructure industries. It includes planning and preparing for operations, positioning and setting up platforms, conducting work activities from elevated platforms, carrying out operator maintenance and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Select personal protective equipment appropriate for work activities 1.5. Inspect and assess site conditions to determine if scaling is required and take action according to site requirements 1.6. Select appropriate type of equipment according to job type and specifications to maximise efficiency and effectiveness of work activities 1.7. Perform equipment ***pre-start checks*** 1.8. Identify, address and report ***potential risks and hazards*** 1.9. Carry out ***start-up procedures*** 1.10. Communicate with other equipment operators and personnel using approved communication methods 1.11. Identify, address and report environmental issues 1.12. Adhere to emergency procedures in case of fire and/or accident 1.13. Ensure area is well ventilated before entry into worksite 1.14. Use approved ***dust suppression and extraction methods***
2. Position and set up platform	2.1. Position equipment to ensure safety of other equipment and personnel 2.2. Stabilise ***work platform*** to suit ***ground conditions*** 2.3. Select and fit attachments
3. Conduct work activities from elevated platform	3.1. Use approved safety devices ensuring safety of personnel and surrounding site 3.2. Monitor and manage equipment performance using appropriate ***indicators*** 3.3. Operate equipment safely within work environment, road conditions and

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	limitations 3.4. Complete all required documentation clearly, concisely and on time 3.5. Pass on end of shift information to oncoming shift
4. Carry out operator maintenance	4.1. Carry out ***shutdown procedures*** 4.2. Carry out ***operator maintenance***, service and make minor adjustments to equipment
5. Conduct housekeeping activities	5.1. ***Clean*** equipment to maintain condition of equipment and ensure safe and efficient operations 5.2. Clean and store auxiliary service equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate from elevated work platforms underground:

- apply legislative, organisation and site requirements and procedures for operating from elevated work platforms underground
- direct operations
- operate, maintain and clean equipment
- interpret ground conditions
- monitor operations
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate from elevated work platform underground:

- environmental procedures
- equipment parking
- equipment processes, technical capability and limitations
- equipment safety requirements
- isolation procedures
- operational procedures and checks
- site procedures
- site safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operation from elevated work platforms underground • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of operation from elevated work platforms underground • working with others to undertake and complete operations from elevated work platform underground that meet all of the required outcomes • consistent timely operation from elevated work platforms underground that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete operation from elevated work platform underground

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislation including:
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• organisational and site requirements and procedures
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Pre-start checks may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • cab condition (no rags in air conditioner vent, dirt around brake and accelerator pedals, seat condition, all gear secured) • cab mounts, windows (clean, emergency exit tag in place) • capacity of equipment and/or attachments • computer systems • damage to equipment • danger tags • display instrumentation and gauges (indicators, gauges, laser levels) • duration of operation • efficient and safe operating speed • engine and stop engine lights (orange and red) • engine oil to be checked before starting engine • fire suppression unit (pins in position in triggers) • fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel, transmission)

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	• grease lines • light positioning and cleanliness • no combustible material around exhaust • oil leaks (engine, hydraulic hoses, on ground) • fuel leaks, transmission, (engine, on ground) • operating limitations • personal proximity • portable fire extinguisher (bracket, gauge, hose, ease of access) • radiator top up tank • type of activities performed • tyres and rim condition • vehicle number • visual and audio warning devices and lights • water leaks (radiator, hoses) • weight and/or load limitations • wheel nuts and studs
Potential risks and hazards may include:	• working at heights • vertical openings • bund and/or wall collapse • decline traffic • mount and dismount injuries • pot holes • road conditions • rocks • spillage • unauthorised personnel • unsafe ground • ventilation failure • visibility
Start-up procedures may include:	• safety mechanisms operational (horn, operating lights), • correct location of equipment
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Work platform may include:	• basket • cherry pickers • crane box

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	• scissor lift
Ground conditions may include:	• broken ground • dry • location of water table • noise • slope of working surface • stability of ground • stable ground (compaction) • amount of scale • ventilation characteristics (fumes, dust) • visibility • wet
Indicators may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • fuel filter • parking brake • retarder • service meter • speedometer/odometer • steering filters • tachometer • torque converter oil temperature • transmission filter • voltmeter/ ammeter • water temperature
Shutdown procedures may include:	• safety mechanisms operational (horn, operating lights), • correct location of equipment • vehicle is left secured
Operator maintenance may include:	• checking fluid levels • filter changing • greasing • keeping cab clean • tightening loose fittings
Clean may include:	• degreasing • forced air • steam cleaning • vacuum • water

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Environmental issues may include:	• dust • fumes • noise • water

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND204A Refuel vehicles/machines underground

Modification History

Not applicable.

Unit Descriptor

This unit covers the refuelling of vehicles/machines underground in the resources and infrastructure industries. It includes preparing for refuelling, refuelling the vehicle or machine, and conducting housekeeping functions. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for refueling	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Comply with relevant regulations/standards 1.3. Locate designated fuel bay and manoeuvre vehicle/machine to correct refuelling location 1.4. Shutdown vehicle/machine by following correct ***shutdown procedures*** for refuelling area 1.5. Check fire fighting equipment in refuelling area before commencing refuelling 1.6. Check and/or activate for ***ventilation*** devices in refuelling area before commencing refuelling
2. Refuel vehicle/machine	2.1. Follow site ***refuelling procedures*** to refuel vehicle/machine, staying with vehicle during the entire operation 2.2. Comply with ***environmental procedures and response plans***
3. Conduct housekeeping functions	3.1. Correctly re-hang hose and conduct ***fuel bay housekeeping*** 3.2. Complete all required records and documentation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to refuel vehicles/ machines underground:

- apply legislative, organisation and site requirements and procedures for refueling vehicles/machines underground
- apply diagnostic techniques
- make decisions
- direct operations
- use driving techniques in dark and enclosed conditions
- identify hazards
- use hazardous goods handling techniques
- interpret ground conditions
- interpret plans, reports, maps and specifications
- maintain records
- organise work tasks
- report defects
- follow safe work practices
- select and fit personal protective equipment
- work in a team
- troubleshoot
- use communications equipment
- use computer systems
- use protective equipment
- use hand tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to refuel vehicles/machines underground:

- emergency procedures
- environmental procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data
- hazardous goods procedures and consequences of spills

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- isolation procedures
- mine operational system
- night and day working procedures
- OHS procedures
- underground mining procedures
- operational procedures and checks
- road rules
- shutdown procedures
- site procedures
- site safety requirements
- start-up procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for refuelling vehicles/ machines underground • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of refuelling of vehicles/machines underground • working with others to undertake and complete the refuelling of vehicles/machines underground that meets all of the required outcomes • consistent, safe and timely completion of refuelling of vehicles/machines underground that, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the refueling of vehicles/machines underground

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Shutdown procedures may include:	• correct location of vehicle/machine • safety mechanisms operational (horn, operating lights) • vehicle/machine engine is switched off
Ventilation may include:	• warning lights • regulator doors • ventilation louvres • warning alarms • auxiliary fans
Refuelling procedures may include:	• checking hoses, nozzles and fittings prior to refuelling • remove tank cap • insert nozzle • complete refuelling • replace the fuel tank cap
Environmental procedures and response plans may include:	• runoff control procedures • spills clean-up procedures • water quality procedures • major spill response plans
Fuel bay housekeeping may include:	• cleaning up any minor fuel spillage • cleaning up any rags and debris • keeping area clean and tidy • notifying supervisor of any large spillages and potential hazards • re-hanging of hoses

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Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND205A Respond to a workforce incident

Modification History

Not applicable.

Unit Descriptor

This unit covers responding to a workforce incident in the resources and infrastructure industries. It includes assessing the incident scene and preparing for a response, responding to an emergency or incident situations, and reporting and de-briefing. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess incident scene and prepare for response	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Interpret alarms and indicators to determine the nature, scope and location of the ***incident*** 1.3. Assess incident and determine appropriate course of action in keeping with requirements for personal safety that may include mine site Trigger Action Response Plans (TARPs) 1.4. Locate, access and check serviceability of ***emergency equipment*** 1.5. Locate all local workers and ensure that they are removed from the incident scene, and erect barriers to prevent access by other persons 1.6. Notify occurrence and details of incident to appropriate people using appropriate methods of ***communication***
2. Respond to emergency or incident situations	2.1. Select emergency equipment and use appropriately to deal with the incident 2.2. Isolate potential sources of danger and put in place warning signs/signals/barriers 2.3. Take local measures to reduce impact of incident 2.4. Coordinate and control response to incident to ensure continuing safety of personnel at the site 2.5. Exercise control of the incident situation until formal relief is notified/received 2.6. Follow or implement evacuation procedures where appropriate in accordance with mine evacuation plan 2.7. Continually monitor and assess emergency situation and changes in circumstances, communicate requests for further assistance or evacuation to appropriate officials
3. Report and de-brief	3.1. Provide details of incident to relevant personnel 3.2. Provide information to investigating external agencies where required

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to respond to a workforce incident:

- apply legislative, organisation and site requirements and procedures for responding to a workforce incident
- identify hazards/potential hazards
- observe, analyse and report incidents
- read and interpret mine plans
- navigate in underground mines
- apply initial response First Aid
- apply fire fighting techniques
- communicate
- read, interpret and apply relevant geological and survey data

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to respond to a workforce incident:

- relevant legislative requirements
- mine emergency procedures
- mine incident procedures
- initial response First Aid
- breathing apparatus
- fire fighting
- hazards and potential hazards
- relevant geological and survey data
- relevant ventilation information
- mine plans
- mine communication systems
- TARPs for Hazard Management Plans
- relevant risk Management Procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for responding to a workforce incident • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of response to a workforce incident • working with others to undertake and complete the response to a workforce incident that meets all of the required outcomes • consistent timely completion of response to a workforce incident that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the response to a workforce incident

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• organisational and site requirements and procedures
	• manufacturer's guidelines and specifications
	• safety information and procedures including:
	  • relevant legislation and regulations
	  • relevant Australian standards
	  • management systems and plans
	  • OHS policy
	  • relevant code of practice
	  • safe work procedures (or equivalent)
	  • Hazard Management Plans
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Incident may include:	• fires • chemical spills • spillage of oils, fuels, water • minor accident • major accident or fatality • underground explosion or fire • ignition • rock burst/outburst • spontaneous combustion • environmental incident • explosion • roof/rib fall • inrush • irrespirable atmosphere • Hazchem • vehicle accidents • wall collapse • wind blast • excessive dust

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Emergency equipment may include:	• roof support materials • fire fighting equipment • pumping equipment • lifting and cutting equipment • relevant plant and equipment • First Aid equipment • communication systems • self rescuers (conversion/filter units or oxygen generation) • self contained breathing apparatus • respiratory protection • ventilation equipment • lifting and cutting equipment • rescue/rope rescue/recovery equipment • absorption materials • spill response kits • personal protective equipment • chemical safety systems
Communication may include:	• radio • telephone • telemetry • verbal • written • runners • DAC • PED • signals

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND206A Install hand held underground ground support

Modification History

Not applicable.

Unit Descriptor

This unit covers the installing of hand held ground support in resources and infrastructure industries. It includes planning and preparing for installing ground support, setting up and preparing for installation, and installing ground support. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for installing ground support	1.1. Access, interpret and apply ***compliance documentation*** relevant to the installing of hand held ground support in underground metalliferous mines 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Select appropriate personal protective equipment 1.5. Inspect and assess site conditions to determine scaling requirements, misfires, starting points and to take action accordingly 1.6. Conduct ***equipment*** pre-start and visual checks in readiness for operation 1.7. Identify, address and report ***potential risks and hazards*** 1.8. Assess site conditions and review historical information to clarify drilling requirements 1.9. Use approved ***dust suppression and extraction methods*** if required
2. Set up and prepare for installation	2.1. Scale loose material and make site safe (where applicable) 2.2. Connect ***auxiliary services*** where required 2.3. Erect ***boundaries*** to prevent unauthorised access 2.4. Complete all required documentation clearly, concisely and on time
3. Install ground support	3.1. Install reinforcements 3.2. Conduct equipment shutdown procedures 3.3. Pass on end of shift information to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install hand held ground support in underground metalliferous mines:

- apply legislative, organisation and site requirements and procedures for setting up, preparing and installing ground support
- operation of hand and power tools
- hazard identification
- monitor operations
- operation of power tools
- report defects

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install hand held ground support in underground metalliferous mines:

- dewatering procedures and characteristics
- environmental procedures
- equipment safety requirements
- geological and technical data (basic)
- ground support characteristics and applications
- hazardous goods procedures (handling and transport)
- inspection procedures
- isolation procedures
- manufacturer's specifications
- mining regulations
- operational procedures and checks
- site procedures
- start-up and shutdown procedures
- underground procedures
- working knowledge of all stope areas

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the installing of hand held ground support in underground metalliferous mines • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the installing of hand held ground support in underground metalliferous mines • working with others to undertake and complete the set up, preparation and installing of hand held ground support in underground metalliferous mines that meet all of the required outcomes • consistent timely completion of the installing of hand held ground support in underground metalliferous mines that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.

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	• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate:
	  • working with others to undertake and complete the installing of hand held ground support in underground metalliferous mines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures including:
	  • relevant site safety and health
	  • site inspection
	  • explosives
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Equipment may include:	• rig • approved anchor points • approved charge hose • approved cord cutters • lanyatels (safety rope) • lights • line/string • paint • scaling bar • signage • tape measure • recommended/required PPE
Potential risks and hazards may include:	• broken detonation leads • contaminants • eye hazards (flying chips) • falling rock when collaring • faulty equipment • ground conditions • high air and water pressures • high voltage electricity • hydraulic oil pressure • lack of ventilation • misfires

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	• overhanging rock • tipping hazards • unauthorised personnel • wet holes • uncontrolled radio frequencies and transmitters
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site • fans
Auxiliary services may include:	• compressed air • de-watering pumps • electricity • ventilation • water
Boundaries may be physical or manned and may include:	• cable across drive (wire, chain) • witches hats, barricade tape
Personnel may include:	• contractors • drillers • drivers • holders of appropriate tickets • inspectors • licensed operators • maintenance staff • personnel authorised by mine management • service personnel • supervisors • surveyors • trades persons

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIUND207A Conduct underground lifting operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of underground lifting operations in the resources and infrastructure industries. It includes planning and preparing for underground lifting and moving loads. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for underground lifting	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm work requirements in the form of ***shift briefings***, handover details or work orders before proceeding 1.3. Develop a ***preliminary underground lifting plan*** or site sketch taking account of essential information 1.4. Check and confirm job feasibility and schedule with the client and other relevant persons 1.5. Confirm hazards associated with the use of cranes and other load moving equipment and identify and check measures to eliminate or control these hazards with appropriate parties 1.6. Finalise and confirm the underground lifting plan, including the scheduling of required resources
2. Prepare for underground lifting	2.1. Identify, select, inspect, assemble and certify ***underground lifting equipment***, materials and tools required for the plan as serviceable 2.2. Label unserviceable equipment, materials and tools in accordance with Mine Managers Rules and Schemes 2.3. Select and prepare appropriate anchors in accordance with the Strata Control Plan
3. Move loads	3.1. Deduce and confirm appropriate safe working loads and centre of gravity using load charts and sling tags/charts prior to load moving 3.2. Direct the movement of the load using standard ***signals for load moving*** 3.3. Perform load moving in accordance with the plan and acceptable ***safe work practices*** 3.4. Perform work in an underground environment 3.5. Connect lifting gear to load 3.6. Connect load to ***movement device*** using

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	appropriate and certified equipment 3.7. Ensure stability of the load by application of load movement procedure, temporary bracing and/or load support appropriate to the task 3.8. Follow appropriate specifications during the placement and securing of the load 3.9. Dismantle and remove/restore load shifting

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct underground lifting operations:

- apply legislative, organisation and site requirements and procedures for conducting underground lifting operations
- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply diagnostic techniques
- use relevant hand tools
- ability to identify hazards

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct underground lifting operations:

- appropriate approved scheme of training
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- hand signals
- potential hazards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting underground lifting operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conduct of underground lifting operations • working with others to undertake and complete the conduct of underground lifting operations that meet all of the required outcomes • consistent timely completion of underground lifting operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete underground lifting operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Shift briefings may include:	• site plans and drawings • work specifications • basic working plans and material schedules • the confirmed mass and dimensions of loads • capacities and availability of load shifting equipment
Preliminary underground lifting plan may include:	• confirmed details of underground lifting requirement • confirmed dimensions • site access and egress • suitability and availability of materials • tools and equipment • identification of potential hazards • probable control measures • identification of site coordination requirements
Underground lifting equipment may include:	• slings • ropes • shackles • eye-bolts
Signals for load moving are to include:	• those that are communicated verbally and with hand signals, to Australian standards
Safe work practices may include:	• legislation and regulations • relevant Australian standards • management plans • manager's rules

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	• OHS policy • code of practice • manufacturer's instructions • safe working or job procedures
Movement devices may include:	• LHD jib attachments • manual and mechanically operated chain blocks/lever pullers • roof supports and winches

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND208A Conduct skip operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of skip operations in the resources and infrastructure industries. It includes conducting skip operations, operating a skip, removing blockages, conducting end-of-shift activities, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational or assistant role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Conduct skip operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Conduct work safely and efficiently 1.3. Receive, interpret and clarify shift changeover details 1.4. Use appropriate personal protective equipment 1.5. Perform ***equipment*** and work area pre-start checks to ensure equipment is ready for operation 1.6. Check records for outstanding maintenance/inspections and record defects to establish the operational status of equipment and take action according to site procedures 1.7. Identify, manage and report defects and ***potential hazards and risks*** according to the site procedures 1.8. Carry out ***start-up procedures*** including checking that the area is clear for operations 1.9. Manage relevant ***environmental issues*** 1.10. Adhere to emergency procedures 1.11. Apply dust suppression and dust extraction methods
2. Operate skip	2.1. Load skip with ***materials*** not exceeding ***capacity*** and minimising spillage 2.2. Communicate with relevant personnel 2.3. Operate skip safely in the working environment with regard to the ***site conditions*** 2.4. Monitor and manage skip performance using appropriate ***indicators*** to aid safe operation 2.5. On identification of ***contaminants*** follow skip shutdown procedures and remove or dispose of contaminants
3. Remove blockages	3.1. Identify and confirm location and nature of ***blockage*** 3.2. Conduct skip isolation procedures and ***safety provisions*** to ensure safety of

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	personnel prior to visual inspection and/or removal of blockage 3.3. ***Remove blockages*** 3.4. Restore skip operations
4. Conduct end-of-shift activities	4.1. Complete all required documentation clearly, concisely and on time 4.2. Pass on end of shift information to oncoming shift
5. Carry out operator maintenance	5.1. Isolate skip before conducting ***operator maintenance*** 5.2. Service and make minor adjustments to equipment 5.3. ***Clean*** skip equipment 5.4. Restore skip operations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct skip operations:

- apply legislative, organisation and site requirements and procedures for conducting skip operations
- apply standard operating practices and procedures around shafts
- work safely and within level of competence
- monitor operations
- communicate and report
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct skip operations:

- key areas of legislated safety and health requirements
- winder systems and operations
- shaft configuration and construction
- shaft services and installations (pipes, cables, ladders etc)
- identification of defects relevant to skip operations through inspection or observation
- trip and fault procedures and abnormal conditions
- site emergency procedures
- communication system between cage and winder
- recording and logging requirements for winder drivers, and electrical and mechanical maintenance personnel
- environmental procedures
- equipment processes, technical capability and limitations
- geological and technical data (basic)
- isolation and permit-to work systems and procedures
- mining regulation
- mine ventilation system
- site procedures
- in-shaft communications equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting skip operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of skip operations • working with others to undertake and complete skip operations that meet all of the required outcomes • consistent timely completion of skip operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete skip operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative procedures including Acts and regulation dealing with:
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• organisational and site requirements and procedures including:
	  • clean up
	  • emergency procedures
	  • equipment shutdown and isolation procedures
	  • evacuation procedures
	  • First Aid
	  • notification of authorities
	  • permit-to-work systems
	  • safety equipment
	  • use of personal protective equipment
	  • portable electric apparatus procedures
	  • fall arrestor and harness procedures
	  • confined spaces
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Equipment utilised for skip operations may include:	• winding engine • bucket • cage • skip • power supplies and equipment
Potential hazards and risks may	• blockages or obstructions • communication failure

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include:	• oversized material • spillage • unauthorised personnel • unsafe ground • poor visibility • explosion • asphyxiation and drowning
Start-up procedures may include:	• external damage/defects/wear • cleanliness of skip operating station • computer systems • danger/out of service tags • display instrumentation and gauges (indicators, gauges, laser levels) • fire suppression unit (pins in position in triggers) • loose wheels • lubricant/hydraulic/coolant levels • idle positioned and running • light positioning and cleanliness • missing/loose bolts • oil leaks • personal proximity • portable fire extinguisher (bracket, gauge, hose, ease of access) • skip door (including locking arms) • skip rope • visual and audio warning devices and lights • weigh machines
Environmental issues may include:	• dust • fumes • noise • water • heat • flammable and noxious gases • flammable dust
Materials may include:	• gravel • ore • overburden • oxidised waste • rejects • road base • sand

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	• sulphide rock fill • tailings
Factors which affect the **capacity** of skip may include:	• duration of operation • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations
Site conditions may include:	• air quality and quantity • dryness of material • noise • ventilation characteristics (fumes, dust) • visibility • wet material
Indicators may include:	• computer indicators • skip indicators
Contaminants may include:	• consumables • debris • explosives • metal bucket teeth • metal or steel rods • piping • plastic • timber • back-fill
Blockage may include:	• oversize materials • contaminants
Safety provisions may include:	• barricades • safety guards • visible signage
Remove blockages may include:	• firing • water flushing • hot work (including cutting, welding etc)
Operator maintenance may include:	• greasing • replacing broken or missing bolts • rope adjustments • skip door adjustments • tightening loose fittings
Clean may include:	• degreasing • forced air • steam cleaning

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	• vacuum • water

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND209A Operate automated winder

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of automated winders in the resources and infrastructure mining industries. It includes organising automatic winding operations, hauling personnel, hauling equipment materials, carrying out winder inspections and conducting end-of-shift activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational or assistant role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise automatic winding operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Conduct work of ***winder operations*** safely and efficiently 1.3. Receive, interpret and clarify shift changeover details and takes over control of winder 1.4. Select and use personal protective equipment 1.5. Perform ***equipment*** and work area ***pre-operational checks*** to ensure equipment is ready for operation 1.6. Check records for outstanding maintenance/inspections and record defects to establish the operational status of equipment and take action 1.7. Identify, manage and report defects and ***potential hazards and risks*** 1.8. Carry out ***start-up procedures***, including checking that area is clear for operations 1.9. Manage relevant environmental issues 1.10. Adhere to emergency procedures 1.11. Apply dust suppression and dust extraction methods
2. Haul personnel	2.1. Communicate with relevant personnel 2.2. Confirm cage is ready for operation 2.3. ***Energise the system***, follow start-up procedures and operate personnel cage to comply with directions from person in charge of cage 2.4. ***Monitor*** and manage cage performance using appropriate indicators 2.5. Carry out ***shutdown procedures***
3. Haul equipment materials	3.1. Communicate with relevant personnel 3.2. Energise the system, follow start-up procedures and transport equipment using auto winder 3.3. Monitor and manage skip performance using appropriate indicators

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	3.4. Carry out shutdown procedures
4. Carry out winder inspections	4.1. Isolate and prove isolation of equipment 4.2. Inspect winder and ***auxiliary equipment*** and report faults/defects and prepare winder for routine servicing
5. Conduct end-of-shift activities	5.1. Complete all required documentation 5.2. Pass on end-of-shift information and hand over control to oncoming shift 5.3. Ensure control room is ***clean*** and tidy

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate automated winders:

- apply legislative, organisation and site requirements and procedures for operating automated winders
- monitor shaft operations
- communicate and report
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate automated winders:

- key areas of mining acts and regulations
- relevant key areas of legislated safety and health requirements pertaining to winding
- winder types, systems and operations
- shaft configuration and construction
- shaft services and installations (pipes, cables, ladders etc)
- possible defects in winder/winch equipment/installations
- identification of defects relevant to skip operations through inspection or observation
- daily/weekly/monthly inspection requirements and maintenance requirements and procedures for winding systems
- explosives handling and transport
- trip and fault procedures and abnormal conditions
- site winder emergency procedures
- communication system between cage and winder
- recording and logging requirements for winder drivers and electrical and mechanical maintenance personnel
- environmental procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data (basic)
- isolation and permit-to-work systems and procedures/manufacturer's specifications
- mining regulation/operational procedures and checks

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- primary and secondary ventilation/mine ventilation system
- shaft installations
- site procedures
- in-shaft communications equipment and practices

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating automated winders • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of operation of automated winders • working with others to undertake and complete the operation of automated winders that meets all of the required outcomes • consistent timely operation of automated winders that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to operate automated winders

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative which may include Acts and regulation dealing with:
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• organisational and site requirements and procedures including:
	  • clean up
	  • equipment shutdown and isolation procedures
	  • evacuation procedures
	  • First Aid
	  • notifying relevant authorities
	  • permit-to-work systems
	  • safety equipment
	  • use of personal protective equipment
	  • communication procedures (e.g. with platmen)
	  • portable electric apparatus procedures
	  • fall arrestor and harness procedures
	  • confined spaces
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Winder operations may include:	• winder operations in drifts • tunnels • slopes • inclines
Equipment may include:	• winding engine • bucket

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	• cage • skip • power supplies and equipment
Pre-operational checks may include:	• external damage/defects/wear • computer systems • communications systems • controls • protection and emergency devices • fire suppression systems • danger/out of service tags • display instrumentation and gauges (indicators, gauges, laser levels) • lubricant/hydraulic/coolant levels • idle positioned and running • light positioning and cleanliness • personal proximity • skip/cage doors • ropes • visual and audio warning devices and lights • weigh machines • head frame/sky shaft • shaft brace
Potential hazards and risks may include:	• communication failure • falling objects • movement (convergence of equipment) • plant failure • power failure • spillage • unauthorised personnel • visibility • vibration • noise • explosion • asphyxiation and drowning
Start-up procedures may include:	• pre-start inspections, checks and tests • setting winding mode • warning platmen, cage tenders, pocket operators, beltmen, shaft crew and others of start-up • carrying out test winding cycle if required • checking that equipment/system operations are normal

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Energising the system may include:	• activate power supply/starting diesel prime mover • run-up motor-generator set/ exciters/exhaust and cooling fans/hydraulic drive • run-up hydraulic/pneumatic and other auxiliary equipment • checking that fault indicator lamps and signals are functioning • checking that equipment/system operations are normal and no faults/trips indicated
Monitor may include:	• duration of operation • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations
Shutdown procedures may include:	• de-activating power/stopping diesel prime mover • shutting down motor-generator set/exciters/exhaust and cooling fans/hydraulic drive • shutting down hydraulic/pneumatic and other auxiliary equipment
Auxiliary equipment may include:	• emergency power supplies • emergency communications systems
Clean may include:	• degreasing • forced air • steam cleaning • vacuum • water
Dust suppression and extraction methods may include:	• mobile/fixed sprays • manual watering down site
Environmental issues may include:	• dust • fumes • noise • water • heat • flammable and noxious gases • flammable dust

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Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND301A Operate manual winder

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of manual winder in the resources and infrastructure industries. It includes organising for winder operations, hauling personnel, hauling equipment/materials, carrying out winder inspections, and conducting end of shift activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise for winder operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details and take over control of winder 1.3. Select and use personal protective equipment 1.4. Perform ***equipment*** and work area ***pre-operational checks*** to ensure equipment is ready for operation 1.5. Check records for outstanding maintenance/inspections, record defects to establish the operational status of equipment and take action 1.6. Identify, address and report defects and ***potential hazards and risks*** 1.7. Carry out ***start-up procedures*** including checking that area is clear for operations 1.8. Manage relevant ***environmental issues*** 1.9. Adhere to emergency procedures 1.10. Apply ***dust suppression and extraction methods*** 1.11. Ensure control cabin is environmentally and ergonomically sound
2. Haul personnel	2.1. Communicate with relevant personnel 2.2. Confirm cage is ready for operations 2.3. ***Energise the system***, follow start-up procedures and operate personnel cage to comply with directions from person in charge of cage 2.4. ***Monitor and manage cage performance*** using appropriate indicators 2.5. Adjust speed and movement as required 2.6. Carry out ***shutdown procedures***
3. Haul equipment/ materials	3.1. Communicate with relevant personnel 3.2. Confirm cage/skip is ready for operation 3.3. Energise the system, follow start-up procedures and transport equipment using manual winder

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	3.4. Adjust speed and movement as required 3.5. Monitor and manage cage and/or skip performance using appropriate indicators 3.6. Carry out shutdown procedures
4. Carry out winder inspections	4.1. Isolate and prove isolation of equipment 4.2. Inspect winder and ***auxiliary equipment*** and report faults/defects and prepare winder for routine servicing
5. Conduct end-of shift activities	5.1. Complete all required documentation 5.2. Pass on end-of-shift information and hand over control to oncoming shift 5.3. Ensure control room is ***clean*** and tidy

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate manual winder:

- apply legislative, organisation and site requirements and procedures for operation of manual winder
- operate shaft winders
- operate, maintain and clean equipment
- monitor shaft operations
- communicate and report
- monitor conveyances
- use hand tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate manual winder:

- the key areas of mining acts and regulations
- the relevant key areas of legislated safety and health requirements pertaining to winding
- winder types, systems and operations
- shaft configuration and construction
- shaft services and installations (pipes, cables, ladders etc)
- possible defects in winder/winch equipment/installations
- identification of defects relevant to skip operations through inspection or observation
- daily/weekly/monthly inspection requirements and maintenance requirements and procedures for winding systems
- site winder emergency procedures
- recording and logging requirements for winder drivers, and electrical and mechanical maintenance personnel
- equipment safety requirements
- primary and secondary ventilation/mine ventilation system
- shaft installations
- site procedures
- in-shaft communications equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operation of manual winder • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of manual winder • working with others to undertake and operate manual winder that meets all of the required outcomes • consistent timely operation of manual winder that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to operate manual winder

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislation including Acts and regulation dealing with:
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• organisational and site requirements and procedures including:
	  • clean up
	  • emergency procedures
	  • equipment shutdown and isolation procedures
	  • evacuation procedures
	  • First Aid
	  • notifying relevant authorities
	  • permit-to-work systems
	  • safety equipment
	  • use of personal protective equipment
	  • communication procedures (e.g. with platmen)
	  • portable electric apparatus procedures
	  • fall arrestor and harness procedures
	  • confined spaces
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Equipment may include:	• winding engine • bucket/kibbles • cage/working platforms including chinaman's protective top cover • skip

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	• power supplies and equipment
Pre-operational checks may include:	• external damage/defects/wear • computer systems • communications systems • winder controls • protection and emergency devices • fire suppression systems • danger/out of service tags • display instrumentation and gauges (indicators, gauges, laser levels) • lubricant/hydraulic/coolant levels • idle positioned and running • light positioning and cleanliness • personal proximity • skip/cage doors • ropes • visual and audio warning devices and lights • weigh machines • head frame/sky shaft • shaft brace
Potential hazards and risks may include:	• communication failure • falling objects • explosives • moving equipment • collisions • plant failure • electricity • spillage • hazardous substances • unauthorised personnel • visibility • vibration • noise • explosion • asphyxiation and drowning
Start-up procedures may include:	• pre-start inspections, checks and tests • setting winding mode • advisory signals indicating impending movement of conveyance • carrying out test-winding-cycle if required • checking that equipment/system operations are normal

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Environmental issues may include:	• dust • fumes • noise • water • heat • flammable and noxious gases • flammable dust
Dust suppression and extraction methods may include:	• mobile/fixed sprays • manual watering down site
Energise the system may involve:	• activate power supply or start diesel motor-generator • running up hydraulic/pneumatic and other auxiliary equipment • check fault indicators
Monitor and manage cage performance may include:	• duration of operation • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations
Shutdown procedures may include:	• de-activating power/stopping diesel prime mover • shutting down motor-generator set/exciters/exhaust and cooling fans/hydraulic drive • shutting down hydraulic/pneumatic & other auxiliary equipment
Auxiliary equipment may include:	• emergency power supplies • general mine services • emergency communications systems
Clean may include:	• degreasing • forced air • steam cleaning • vacuum • water • solvents • rags and cotton waste
Winding operations include:	• winder operations in drifts, tunnels, slopes or inclines

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Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND302A Conduct cage operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of cage operations in the resources and infrastructure industries. It includes organising cage operations, operating cages, transporting explosives in the cage, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise cage operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Select personal protective equipment appropriate for work activities 1.4. Perform equipment and work area pre-start checks to ensure equipment is ready for operation 1.5. Check records for outstanding maintenance/inspections and recorded defects to establish the operational status of equipment and if defective take action 1.6. Identify, address and report ***potential risks and hazards*** 1.7. Carry out start-up procedures, including ***checking that area is clear for operations*** 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures
2. Operate cage	2.1. ***Load*** cage within *capacity* and compliance with specified limits 2.2. Ensure that *loads* in or attached to cage, are positioned and secured prior to transit 2.3. Communicate with relevant personnel 2.4. Operate cage safely in the working environment 2.5. Monitor and manage cage performance using appropriate ***indicators*** to aid safe operations 2.6. Complete all required documentation clearly, concisely and on time 2.7. Pass on end of shift information to oncoming shift
3. Transport explosives in the cage	3.1. Identify explosives used on site 3.2. Determine and ensure the segregation and separation of detonators and explosives 3.3. Secure and transport blasting agents and explosives 3.4. Track and record movement of explosives

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	and detonators
4. Carry out operator maintenance	4.1. Isolate cage before conducting ***operator maintenance*** 4.2. Service and make minor adjustments to equipment 4.3. Restore cage operations

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct cage operations:

- apply legislative, organisation and site requirements and procedures for conducting cage operations
- apply standard operating practices and procedures around shafts
- work safely and within level of competence
- clean equipment
- grease
- communicate and report
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct cage operations:

- the key areas of mining acts and regulations pertaining to winding
- shaft operations
- shaft installations
- identification of defects relevant to cage operations through inspection or observation
- trip and fault procedures and abnormal conditions
- site winder emergency procedures
- communication system between cage and winder
- recording and logging requirements for winder drivers, and electrical and mechanical maintenance personnel
- isolation and permit-to-work procedures
- mine ventilation system
- site procedures
- in-shaft communication equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting cage operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of cage operations • working with others to undertake and conduct cage operations that meet all of the required outcomes • consistent timely conduct of cage operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and conduct cage operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislation, which may include Acts and regulation dealing with:
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• organisational and site requirements and procedures which may include:
	  • clean up
	  • equipment shutdown and isolation procedures
	  • evacuation procedures
	  • First Aid
	  • notifying relevant authorities
	  • permit-to-work systems
	  • safety equipment
	  • use of personal protective equipment
	  • communication procedures (e.g. with winder operator)
	  • portable electric apparatus procedures
	  • fall arrestor and harness procedures
	  • confined spaces
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Potential risks and hazards may include:	• blockages or obstructions • communication failure • oversized loads • unauthorised personnel • unsafe ground • poor visibility

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	• explosion • asphyxiation and drowning
Checking that area is clear for operations may include:	• external damage/defects/wear • cage arresting and slack rope systems • cleanliness of cage and plats • computer systems • danger/out of service tags • display instrumentation and gauges (indicators, gauges, laser levels) • fire suppression unit (pins in position in triggers) • loose wheels • communication systems • lubricants • idle positioned and running • guides and shoes • plat and cage illumination • oil leaks • personnel and materials proximity to shaft • portable fire extinguisher (bracket, gauge, hose, ease of access) • cage doors • cage ropes and attachments • visual and audio warning devices and lights
Environmental issues may include:	• dust • fumes • noise • water • heat • flammable and noxious gases • flammable dust
Capacity of the cage may be affected by:	• efficient and safe operating speed • personnel carrying capacity • operating limitations • type of activities performed • weight and/or load limitations
Loads may include:	• people • automotive diesel fuel • explosives (including detonators) • consumables • drilling equipment • trackless vehicles

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	• track vehicles • ground support materials • cement • lubricants • paints • other hazardous substances • track laying materials
Indicators may include:	• computer indicators • cage indicators • plat indicators • communication and signalling systems
Operator maintenance may include:	• greasing • rope adjustments • cage door adjustments • tightening loose fittings

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND303A Operate winder for shaft sinking

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of winder for shaft sinking in the resources and infrastructure industries. It includes organising for winder operations, conducting shaft sinking using manual winder, carrying out winder inspections, and conducting end-of-shift activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise for winder operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Select personal protective equipment appropriate for work activities 1.4. Perform ***equipment*** and work area ***pre-start checks*** to ensure equipment is ready for operation 1.5. Check records for outstanding maintenance/inspections and recorded defects to establish the operational status of equipment and if defective take action 1.6. Identify, address and report ***potential risks and hazards*** 1.7. Carry out ***start-up procedures***, including checking that area is clear for operations 1.8. Adhere to emergency procedures 1.9. Apply dust suppression and extraction methods 1.10. Ensure control cabin is environmentally and ergonomically sound
2. Conduct shaft sinking using manual winder	2.1. Communicate with relevant personnel 2.2. Confirm kibble is ready for operation 2.3. ***Energise the system***, follow start-up procedures and operate winder to comply with directions from the person in charge 2.4. ***Monitor*** and manage winder performance using appropriate ***indicators*** 2.5. Adjust speed and movement 2.6. Operate winder (or winders) for shaft sinking operations 2.7. Carry out ***shutdown procedures***
3. Carry out winder inspections	3.1. Isolate and prove isolation of *equipment* 3.2. Inspect winder and ***auxiliary equipment*** and report faults/defects and prepare winder for routine servicing
4. Conduct end-of-shift	4.1. Complete all required documentation 4.2. Pass on end of shift information and hand

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	over control to oncoming shift 4.3. Ensure control room is ***clean*** and tidy

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate winder for shaft sinking:

- apply legislative, organisation and site requirements and procedures for operation of winder for shaft sinking
- operate sinking winders
- operate and clean equipment
- monitor shaft sinking operations
- communicate and report
- monitor conveyances
- use hand tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate winder for shaft sinking:

- the key areas of mining acts and regulations
- the relevant key areas of legislated safety and health requirements pertaining to winding
- winder type and systems and operations
- shaft configuration and construction
- shaft services and installations (pipes, cables, ladders etc)
- possible defects in winder/ equipment/installations
- identification of defects relevant to sinking operations through inspection or observation
- daily/weekly/monthly inspection requirements and maintenance requirements and procedures for winding systems
- trip and fault procedures and abnormal conditions
- site winder access/authorisation procedures
- site winder emergency procedures
- communication system between sinking operations and winder
- recording and logging requirements for winder drivers, and electrical and mechanical maintenance personnel
- equipment processes, technical capability and limitations
- isolation and permit-to work systems and procedures
- primary and secondary ventilation

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- shaft ventilation system
- site procedures
- in-shaft communications equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operation of winder for shaft sinking • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of operation of winder for shaft sinking • working with others to undertake and complete the operation of winder for shaft sinking that meets all of the required outcomes • consistent timely operation of winder for shaft sinking that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to operate winder for shaft sinking

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislation which may include Acts and regulation dealing with:
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• site procedures which may include:
	  • clean-up
	  • emergency procedures
	  • equipment shutdown and isolation procedures
	  • evacuation procedures
	  • First Aid
	  • notifying relevant authorities
	  • permit-to-work systems
	  • safety equipment
	  • use of personal protective equipment
	  • communication procedures
	  • portable electric apparatus procedures
	  • fall arrestor and harness procedures
	  • confined spaces
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Equipment may include:	• winding engines and head frames • stages • kibble/skip/cage • power supplies and equipment • services • fans/pumps/compressors/super-sucker • shaft doors

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	• scrolls/tipple • conveyance guide systems • crossheads
Pre-start checks may include:	• damage/defects/wear to plant and equipment (includes infrastructure) • computer systems • communications systems • winder controls • protection and emergency devices • fire suppression systems • danger/out of service tags • display instrumentation and gauges (indicators, gauges, laser levels) • lubricant/hydraulic/coolant levels • light positioning and cleanliness • personal proximity to moving plant • ropes • visual and audio warning devices and lights • head frame/sky shaft • shaft brace area
Potential risks and hazards may include:	• communication failure • falling objects • explosives • moving equipment • collisions • plant failure • electricity • spillage • hazardous substances • unauthorised personnel • visibility • vibration • noise • explosion • asphyxiation and drowning
Start-up procedures may include:	• pre-start inspections, checks and tests • advisory signals indicating impending movement of conveyance • carrying out test winding cycle if required • checking that equipment/system operations are normal
Energise the system may	• activate power supply or start diesel

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include:	motor-generator • running up hydraulic/pneumatic and other auxiliary equipment • check fault indicators
Monitor may include: may include:	• duration of operation • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations
Indicators may include:	• computer indicators • personnel cage/skip indicator
Shutdown procedures may include:	• de-activating power • shutting down hydraulic/pneumatic and other auxiliary equipment
Auxiliary equipment may include:	• emergency power supplies • emergency communications systems • fans and pumps
Clean may include:	• degreasing • forced air • steam cleaning • vacuum • water • solvents • rags and cotton waste

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND304A Recover equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the recovery of equipment in the resources and infrastructure industries. It includes planning and preparing for recovery, recovery and access of equipment and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for recovery	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify details of the recovery requirements 1.3. Access and apply ***safety information and procedures*** including use of personal protective equipment 1.4. Select and prepare ***materials*** required for the task 1.5. Identify, address and report ***potential hazards and risks***, and ***environmental and heritage issues*** 1.6. Conduct ***pre-start checks*** to ensure equipment is ready for operation 1.7. Assist in the preparation of a recovery plan
2. Recover and access equipment	2.1. If necessary, carry out pre-start, start-up, park-up and shutdown 2.2. Install and operate ***recovery equipment*** within the limitations of the site 2.3. Recover equipment systematically using approved methods/plans, with minimal loss and damage of equipment 2.4. Carry out pushing and towing of equipment and plant safely and in accordance with equipment capabilities 2.5. Apply and interpret diagnostic operations on recovered equipment 2.6. Assess if decommissioning of equipment is required and take action if necessary
3. Conduct housekeeping activities	3.1. Clean equipment 3.2. Carry out, identify and manage removal of spills 3.3. Clean and store attachments and other ancillary equipment 3.4. Complete all required records and documentation accurately and promptly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to recover equipment:

- apply legislative, organisation and site requirements and procedures for recovery of equipment
- apply operational safety requirements
- access, interpret and apply technical, environmental and geological information
- communicate and coordinate activities with others
- apply risk analysis processes
- analyse recovery methods suitable to the situations
- operate equipment
- anticipate potential hazards
- analyse and respond to changing circumstances
- apply diagnostic techniques
- diagnose problems
- make decisions
- direct operations
- apply driving techniques
- identify hazards/handle hazardous goods
- interpret ground conditions
- interpret plans, reports, maps, specifications
- maintain records/monitor operations
- organise work tasks/employ safe work practices
- report defects
- select and fit personal protective equipment
- work in a team
- use communications equipment
- use computer systems
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to recover equipment:

- operational safety requirements
- mine operational procedures
- geological and environmental conditions in the recovery area

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- relevant risk management process
- potential hazards and remedial or response actions
- available recovery methods
- recovery equipment and materials capabilities and characteristics
- loss and damage causes and control techniques
- recovery site control procedures
- operational signalling procedures
- mine communication systems and procedures
- emergency procedures/ shutdown procedures/start-up procedures
- environmental and heritage procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data
- hazardous goods procedures and consequences of spills
- isolation procedures
- mine operational system
- night and day working procedures
- relevant OHS procedures
- operational procedures and checks
- recovery techniques
- relevant road rules
- site procedures
- site safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for recovery of equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient recovery of equipment • working with others to undertake and complete the recovery of equipment that meets all of the required outcomes • consistent timely recovery of equipment that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the recovery of equipment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• current relevant legislation codes, regulations and standards which may include:
	  • relevant environmental agencies regulations
	  • Environmental Protection Act
	  • isolation procedures
	  • relevant OHS legislation
	  • safety and health management system
	• organisational and site requirements and procedures
	• manufacturer's guidelines and specifications
	• relevant Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Safety information and procedures may be contained in:	• relevant legislation and regulations • relevant Australian standards • management plans • relevant OHS policy • relevant code of practice • manufacturer's instructions • safe working procedures (or equivalents)

Materials may include:	• winches
	• block and tackle
	• chains
	• timber
	• bolters
	• chemicals such as:
	  • PUR
	  • strata binder
	  • grout

Potential hazards and risks may	• unsafe ground • unstable faces

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include:	• fences
	• adjoining pit walls
	• holes
	• pot holes
	• materials
	• over-hanging rocks
	• vehicles
	• abandoned equipment
	• equipment
	• personnel
	• chemicals
	• adverse weather conditions such as:
	  • electrical storms
	  • floods
	  • fires
	• contaminants including:
	  • animal carcasses (sheep, cows, kangaroos)
	  • cigarette butts
	  • consumables
	  • ear plugs
	  • metal bucket teeth
	  • metal or steel rods
	  • old fencing
	  • old piping
	  • plastic
	  • timber

Environmental and heritage issues may include:	• culturally-sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality
Pre-start checks may include:	• air filter restriction indicator • cab including: • horn

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	• lights • air conditioner • display instrumentation and gauges including: • indicators • gauges • laser levels • computer systems • orange and red engine and stop engine lights • fluid levels including: • windscreen washer tank • hydraulic oil • coolant • grease • water • engine oil • fuel • visual and audio warning devices and lights
Recovery equipment may include:	• machinery • mine extraction device • hydraulic mine puller • load haul dumps • shuttle car • breaker line support and mine dozer • ramcar

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND305A Recover underground equipment

Modification History

Not applicable.

Unit Descriptor

This unit covers the recovery of underground equipment in the resources and infrastructure industries. It includes planning and preparing for operations, recovered of equipment and carrying out operator maintenance on recovery equipment/plant. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify ***details of the recovery requirements*** 1.3. Access, interpret and apply environmental, geological and survey data 1.4. Access and apply ***safety information and procedures*** throughout the work 1.5. Assist in the preparation of a ***recovery*** plan 1.6. Estimate, obtain, transport and prepare materials and resources required for the work 1.7. Prepare worksite to ensure a safe work environment and to enable compliance with job plan/instructions 1.8. Inspect and assess site conditions to determine if scaling is required and take action 1.9. Arrange communications with other relevant site personnel
2. Recover equipment	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up and shutdown procedures 2.3. Install recovery ***equipment***/***plant*** and special services 2.4. Communicate with other equipment operators and personnel using approved communication methods 2.5. Recover equipment systematically, using approved methods and equipment in accordance with authorised mine procedures and with minimal loss and damage to equipment 2.6. Recognise and respond to hazardous and emergency situations 2.7. Place recovered equipment into the designated holding area
3. Carry out operator	3.1. Carry out recovery equipment inspections

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maintenance on recovery equipment/plant	and fault finding 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks 3.3. Carry out minor maintenance 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks 3.5. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to recover underground equipment:

- apply legislative, organisation and site requirements and procedures for recovery of underground equipment
- apply operational safety requirements
- access, interpret and apply technical, environmental and geological information
- communicate and coordinate activities with others
- apply risk analysis processes
- analyse recovery methods suitable to the situations
- anticipate potential hazards
- analyse and respond to changing circumstances
- apply diagnostic techniques
- use hand tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to recover underground equipment:

- operational safety requirements
- mine operational procedures
- geological and environmental conditions in the recovery area
- potential hazards and remedial or response actions
- a range of available recovery methods
- loss and damage causes and control techniques
- recovery site control procedures
- operational signalling procedures
- mine communication systems and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for recovery of underground equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of underground equipment recovery • working with others to undertake and complete the recovery of underground equipment that meets all of the required outcomes • consistent timely completion of underground equipment recovery that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete underground equipment recovery

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Details of the recovery requirements may include:	• the equipment to be recovered • the location of the buried equipment • the extent to which it is buried • the known impact of strata control and ventilation • recovery equipment/plant/resource availability • access ways and routes • site control arrangements • time constraints or targets
Safety information and procedures may include:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice • manufacturer's instructions • safe working procedures (or equivalents) • recognised standards
Specific safety requirements are to include formal risk assessment and control processes and may include:	• securing and guarding the work area and accesses • dangers of material under tension • strata support systems • no-go zones
Method of **recovery** may include:	• pulling • excavating • spiralling
Equipment/plant used for	• machinery

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non-routine recovery may include:	• mine extraction device
	• hydraulic mine puller
	• load haul dumps
	• shuttlecar
	• breaker line support and mine dozer
	• ramcar
	• devices and materials used to support non-routine recovery operations may include:
	  • winches
	  • block and tackle
	  • chains
	  • timber
	  • bolters
	  • chemicals (e.g. PUR, strata binder, grout)

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND306A Conduct line of sight remote operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of line of sight remote operations in the resources and infrastructure industries. It includes planning and preparing for remote control operations, setting up line of sight remote operations, conducting line of sight remoting, carrying out operator maintenance and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for remote control operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Select appropriate personal protective equipment 1.4. Select appropriate type of ***equipment*** with ***remote*** capabilities according to job type and specifications to maximise efficiency and effectiveness of the work activities 1.5. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.6. Inspect and assess site conditions to determine if scaling is required and take action 1.7. Identify, address and report ***potential risks and hazards***, ***and environmental issues*** 1.8. Carry out ***start-up***, ***park and shutdown procedures*** 1.9. Confirm location and construction of remoting area 1.10. Erect ***barricades*** or ***signage*** and/or safety provisions where appropriate to prevent unauthorised access 1.11. Adhere to ***emergency procedures*** to ensure safety of personnel, equipment and site 1.12. Use approved ***dust suppression and extraction methods*** 1.13. Ensure area is well ventilated before entry
2. Set up line of sight remote operation	2.1. Check transmitter functions for correct operation 2.2. Ensure radio contact is available for operator at all times during operation 2.3. Confirm operation of visible warning lights 2.4. Check receivers are operational 2.5. Check proximity devices or other safety devices are operational
3. Conduct line of sight remoting	3.1. Wear or position remote controls in a ***safe***

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	location 3.2. Adhere to the ***appropriate operating distance*** and safety procedures when operating equipment remotely 3.3. Continuously assess ***ground conditions*** and determine safest operating method and efficiency of operations 3.4. Store remote controls in a ***secured location*** whilst not in use 3.5. Complete all required documentation clearly, concisely and on time 3.6. Pass on end-of-shift information to oncoming shift
4. Carry out operator maintenance	4.1. Conduct ***operator maintenance*** 4.2. Carry out park-up and shutdown 4.3. Service and make minor adjustments to equipment
5. Conduct housekeeping activities	5.1. Clean equipment and remoting area 5.2. ***Clean*** and store auxiliary service equipment 5.3. Complete all required records and documentation accurately and promptly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct line of sight remote operations:

- apply legislative, organisation and site requirements and procedures for the conduct of line of sight remote operations
- operate, maintain and clean equipment
- monitor remote equipment operation
- operate radio controlled transmitter/receiver
- test and identify remote control faults
- erect barrier systems

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct line of sight remote operations:

- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data (basic)
- isolation procedures
- primary and secondary ventilation

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting line of sight remote operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conduct of line of sight remote operations • working with others to undertake and complete the conduct of line of sight remote operations that meet all of the required outcomes • consistent timely conduct of line of sight remote operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	• consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conduct of line of sight remote operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislation which may include Acts and regulation dealing with:
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• organisational and site requirements and procedures
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Equipment is:	• any piece of equipment with remote capabilities and may include:
	  • drill rig
	  • integrated tool carrier
	  • LHD
	  • rock breaker
	  • bogger (mucking)
	  • recommended/required PPE
	  • laser
	  • camera
	  • proximity device
	  • load-shifting equipment
	  • shot-creting sprays
	  • dozer

Remote may include:	• hard wire (cable) • radio signal
Pre-start checks may include:	• approved remote testing areas • computer systems • display instrumentation and gauges (indicators, gauges, laser levels)

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	• remote controls • visual and audio warning devices and lights
Potential risks and hazards may include:	• communication failure • remote failure • spillage • unauthorised personnel • unsafe ground • visibility
Environmental issues may include:	• dust • fumes • heat • noise • visibility • water
Start-up, **park and shutdown procedures** may include:	• manual • remote operations
Barricades may include:	• barricade tape, lasers • cables across drive (e.g. wire, chain) • witches hats
Signage may include:	• flashing lights • worded signs
Emergency procedures may include:	• clean up • equipment shutdown procedures • evacuation procedures • First Aid • notification of authorities • safety equipment • use of personal protective equipment
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site • fans
Safe location may include:	• approved operating area • cuddie • operating distance from unit
Appropriate operating distance may include:	• distance of person to and from brow • proximity of equipment to operator

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Ground conditions may include:	• broken ground • dry • location of water table • noise • slope of working surface • stability of ground • stable ground (compaction) amount of scale • ventilation characteristics (fumes, dust) • visibility • wet
Secured location may include:	• remote stored under lock and key
Operator maintenance may include:	• cleaning • greasing • inspect battery charges • service cables • tightening loose fittings
Clean may include:	• degreasing • forced air • steam cleaning • water

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND307A Conduct tele-remote operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of tele-remote operations in the resources and infrastructure industries. It includes planning and preparing for tele-remote control operations, setting up tele-remote operations, conducting tele-remoting, carrying-out operator maintenance, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for tele-remote control operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Select personal protective equipment appropriate to the task 1.5. Select appropriate type of ***tele-remote equipment*** according to job type and specifications 1.6. Perform ***equipment pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report ***potential risks and hazards*** 1.8. Carry out ***start-up***, ***park and shutdown procedures*** 1.9. Identify, address and report ***environmental issues*** 1.10. Confirm location and construction of remoting area 1.11. Erect ***barricades*** or ***signage*** and/or safety provisions where appropriate to prevent unauthorised access 1.12. Adhere to ***emergency procedures*** to ensure safety of personnel, equipment and site 1.13. Inspect and assess site conditions to determine if scaling is required and take action according to site requirements 1.14. Use approved ***dust suppression and extraction methods*** 1.15. Ensure area is well ventilated before entry into work area
2. Setup tele-remote operation	2.1. Check transmitter functions for correct operation 2.2. Ensure communication is available for operator at all times during operation 2.3. Confirm operation of visible warning lights 2.4. Check receiver and cameras are installed and operating correctly

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	2.5. Ensure proximity device or barrier is operational 2.6. Activate/erect warning signs in control room
3. Conduct tele-remoting	3.1. Monitor control room ***indicators*** for equipment and environment feedback 3.2. Maintain constant control of remote equipment to ensure safe operation 3.3. Continuously assess ***ground conditions*** and determine safest operating method and efficiency of operations 3.4. Identify cause when proximity sensors are activated and report incidence as required 3.5. Reset proximity sensors 3.6. Shutdown and secure remote controls whilst not in use 3.7. Complete all required documentation clearly, concisely and on time 3.8. Pass on end-of-shift information to oncoming shift
4. Carry out operator maintenance	4.1. Carry out ***operator maintenance*** 4.2. Carry out park-up and shutdown procedures 4.3. Service and make minor adjustments to equipment 4.4. Visually inspect equipment and report faults and make equipment available for operational maintenance
5. Conduct housekeeping activities	5.1. ***Clean*** equipment and remoting area 5.2. Clean and store auxiliary service equipment 5.3. Complete all required records and documentation accurately

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct tele-remote operations:

- apply legislative, organisation and site requirements and procedures for conducting tele-remote operations
- use hand and power tools
- operate radio controlled transmitter/receiver
- test and identify remote control faults

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct tele-remote operations:

- environmental procedures
- equipment parking
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data (basic)
- isolation procedures
- primary and secondary ventilation
- tele-remote operational procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting tele-remote operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of tele-remote operations • working with others to undertake and complete tele-remote operations that meet all of the required outcomes • consistent timely completion of tele-remote operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the tele-remote operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislation which may include Acts and regulations dealing with:
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• organisational and site requirements and procedures
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Tele-remote equipment may include:	• any piece of equipment with tele-remote capabilities and may include:
	  • drill rig
	  • integrated tool carrier
	  • LHD
	  • rock breaker
	  • bogger (mucking)
	• recommended/required PPE
	  • remote may be:
	  • hard wire (cable)
	  • radio signal

Equipment pre-start checks may include:	• approved remote testing areas • computer systems • display instrumentation and gauges (indicators, gauges, laser levels) • remote controls • visual and audio warning devices and lights
Potential risks and hazards may include:	• communication failure • remote failure • spillage

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	• unauthorised personnel entry • unsafe ground • visibility
Start-up, **park and shutdown procedures** may include:	• manual • remote operations
Environmental issues may include:	• dust/fumes/heat • noise • visibility • water
Barricades may include:	• barricade tape, lasers • cables across drive (e.g. wire, chain) • witches hats • infrared proximity detectors
Signage may include:	• flashing lights • worded signs
Emergency procedures may include:	• clean up • equipment shutdown procedures • evacuation procedures • First Aid • notification of authorities • safety equipment • use of personal protective equipment
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site
Indicators may include:	• control room monitors and indicators • equipment indicators • remote indicators
Ground conditions may include:	• broken ground • dryness • location of water table • noise • slope of working surface • stability of ground • stable ground (compaction) amount of scale • ventilation characteristics (fumes, dust) • visibility/wet
Operator maintenance may	• cleaning

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include:	• greasing • inspect battery charges • service cables • tightening loose fittings
Clean may include:	• degreasing • forced air • steam cleaning • water

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND308A Conduct control room operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of control room operations in the resources and infrastructure industries. It includes planning and preparing for control room operations, monitoring and managing operations and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for control room operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Select appropriate personal protective equipment 1.5. Perform computer systems and equipment pre-start checks 1.6. Identify, address and report ***potential risks and hazards*** 1.7. Carry out ***pre-operational checks*** and start-up procedures 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures to ensure safety of personnel, equipment and site 1.10. Check records and identify outstanding maintenance inspections and record identified defects 1.11. Use approved ***dust suppression and extraction methods***
2. Monitor and manage operations	2.1. ***Monitor and manage operations*** utilising appropriate ***indicators*** 2.2. ***Manage faults*** according to site procedures 2.3. Communicate with equipment operators and personnel using approved communication methods 2.4. Complete all required documentation clearly, concisely and on time 2.5. Pass on end-of-shift information to oncoming shift
3. Conduct housekeeping activities	3.1. ***Clean*** equipment 3.2. Clean and store auxiliary service equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to conduct control room operations:

- apply legislative, organisation and site requirements and procedures for conducting control room operations
- direct equipment operators
- monitor equipment operations

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to conduct control room operations:

- emergency procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- isolation procedures
- monitoring procedures
- OHS procedures
- operational procedures and checks

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting control room operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of control room operations • working with others to undertake and complete control room operations that meet all of the required outcomes • consistent timely completion of control room operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete control room operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislation, which may include Acts and regulation dealing with
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• organisational and site requirements and procedures
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Potential risks and hazards may include:	• spillage • visibility • communication failure • unauthorised personnel • control room malfunction • power failure
Pre-operational checks may include:	• all lights working • checking stop buttons • checks tags are in place • control panel operations • performing function tests • personnel listings and clearances • resetting • security control • video cameras operational and clean
Environmental issues may include:	• live overhead wires • humidity • dust
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds)

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	• use of water trucks • ventilation bags operational • watering down site
Monitor and manage operations may include:	• control fire • monitor machinery • monitor operators and equipment progress • monitor production mucking • monitor tag system • operate rock breaking • use video camera
Indicators may include:	• cameras • computer systems • surveillance system
Manage faults may include:	• acknowledge alarm • notify operator at site • reset alarm • restart • visual inspection
Clean may include:	• degreasing • forced air • steam cleaning • water

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND309A Conduct mechanical underground ground support drilling and installation

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of mechanical underground ground support drilling and installation in the resources and infrastructure industries. It includes planning and preparing for drilling and installation, setting up and preparing for installation, and installing ground support. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for drilling and installation	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Plan and prepare work 1.3. Receive, interpret and clarify shift changeover details 1.4. Select appropriate personal protective equipment 1.5. Inspect and assess site conditions to determine scaling requirements, misfires and starting point, and take action accordingly 1.6. Conduct ***equipment*** pre-start and visual checks in readiness for operation 1.7. Identify, address and report ***potential risks and hazards*** 1.8. Assess site conditions and review historical information to clarify drilling requirements 1.9. Use approved ***dust suppression and extraction methods*** if required
2. Set up and prepare for installation	2.1. Scale loose material and make site safe (where applicable) 2.2. Connect ***auxiliary services*** where required 2.3. Align equipment to access drill pattern according to site conditions 2.4. Drill holes according to ground support design and work plan 2.5. Erect ***boundaries*** to prevent unauthorised access 2.6. Complete all required documentation clearly, concisely and on time
3. Install ground support	3.1. Position and stabilise drill equipment ensuring safety of operating ***personnel*** 3.2. Install reinforcements 3.3. Conduct equipment shutdown procedures 3.4. Pass on end of shift information to oncoming shift

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct mechanical underground ground support drilling and installation in metalliferous mines:

- apply legislative, organisation and site requirements and procedures for setting up, preparing and installing ground support
- drilling techniques
- operation of hand and power tools
- hazard identification
- monitor operations
- operation of power tools
- report defects

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct mechanical underground ground support drilling and installation in metalliferous mines:

- dewatering procedures and characteristics
- drilling procedures
- equipment safety requirements
- ground support characteristics and applications
- hazardous goods procedures (handling and transport)
- inspection procedures
- isolation procedures
- site procedures
- working knowledge of all stope areas

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting of mechanical underground ground support drilling and installation in metalliferous mines • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of conducting of mechanical underground ground support drilling and installation in metalliferous mines • working with others to undertake and complete the conducting of mechanical underground ground support drilling and installation in metalliferous mines that meets all of the required outcomes • consistent timely completion of the conducting of mechanical underground ground support drilling and installation in metalliferous mines that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the conducting of mechanical ground support drilling and installation in underground metalliferous mines

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures including:
	  • relevant site safety and health
	  • site inspection
	  • explosives
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Equipment may include:	• rig • drilling • approved anchor points • approved charge hose • approved cord cutters • lanyatels (safety rope) • lights • line/string • paint • scaling bar • signage • tape measure • recommended/required PPE
Potential risks and hazards may include:	• broken detonation leads • contaminants • eye hazards (flying chips) • falling rock when collaring • faulty equipment • ground conditions • high air and water pressures • high voltage electricity • hydraulic oil pressure • lack of ventilation

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	• misfires • overhanging rock • tipping hazards • unauthorised personnel • wet holes • uncontrolled radio frequencies and transmitters
Dust suppression and extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks • ventilation bags operational • watering down site • fans
Auxiliary services may include:	• compressed air • de-watering pumps • electricity • ventilation • water
Boundaries may be physical or manned and may include:	• cable across drive (wire, chain) • witches hats, barricade tape
Personnel may include:	• contractors • drillers • drivers • holders of appropriate tickets • inspectors • licensed operators • maintenance staff • personnel authorised by mine management • service personnel • supervisors • surveyors • trades persons

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIUND310 Apply shot-crete underground

Modification History

Not applicable.

Unit Descriptor

This unit covers the application of shot-crete in the resources and infrastructure industries. It includes planning and preparing for operations, applying shot-crete and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an assistant/operational role at worksites within:

- Metalliferous mining
- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1 Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2 Plan and prepare work 1.3 Receive, interpret and clarify shift changeover details 1.4 Select appropriate personal protective equipment 1.5 Select type of ***equipment***, safety equipment and ground control materials according to job type, work plan and ***site conditions*** 1.6 Inspect and assess site conditions to determine if scaling is required and take action 1.7 Conduct equipment pre-start checks to ensure equipment is ready for operation 1.8 Identify, address and report potential risks and hazards 1.9 Inspect and assess appropriateness of ground control mechanism to ensure safety of site 1.10 Use approved ***dust suppression equipment and/or extraction methods*** to ensure adequate ventilation to minimise the effect of gases/irritants
2. Apply shot-crete	2.1 Prepare and clean targeted surface to ensure maximum cohesion of ***shot-crete*** 2.2 Erect barriers according to site procedures 2.3 Minimise the creation of gases and personnel exposure to fumes according to safe shot-creting processes 2.4 Select and apply shot-crete utilising appropriate application method according to manufacturer's guidelines and ground condition
3. Conduct housekeeping activities	3.1 Maintain barriers/signs after shot-creting according to site procedures 3.2 Complete all required documentation clearly, concisely and on time 3.3 Clean equipment to maintain condition of equipment and ensure safe and efficient operations 3.4 Pass on end of shift information to oncoming shift

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Required Skills and Knowledge

- This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to apply shot-crete:

- apply legislative, organisation and site requirements and procedures for application of shot-crete
- identify hazards
- monitor operations
- apply hydroscaling skills to clean and remove skate prior to shot-creting
- organise work tasks
- report defects
- perform troubleshooting

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to apply shot-crete:

- dewatering procedures and characteristics
- environmental procedures
- equipment safety requirements
- ground control characteristics and applications
- hazardous substances (handling and transport)
- inspection procedures
- isolation procedures
- explosive identification
- manufacturer's specifications
- mining legislation
- site operational procedures and checks
- control
- gas creation
- shot-creting techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for application of shot-crete • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of application of shot-crete • working with others to undertake and complete the application of shot-crete that meets all of the required outcomes • consistent timely completion of application of shot-crete that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application of shot-crete

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislation including:
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• organisational and site requirements and procedures
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Equipment may include:	• power tools and hand tools (including nail guns etc) • hoses • shot-creting equipment • remote operating control box • lifting and handling equipment • lighting • support vehicles • recommended/required PPE
Site conditions may include:	• accessibility • amount of scale • ground conditions(e.g. dry, wet) • ground stability (e.g. broken, blocky, flaky, stable, compacted) • location of water table • slope of working surface • ventilation characteristics (e.g. fumes, dust) • visibility
Dust suppression equipment and/or extraction methods may include:	• mobile/fixed sprays • screens (vent doors, vent blinds) • use of water trucks

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	• ventilation bags operational • watering down site • fans
Shot-crete may be wet or dry and may include:	• additives (drying, etc) • fibrecrete • shot-crete • gypsum

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND401B Apply and monitor the ventilation management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of the ventilation management plan in the resources and infrastructure industries. It includes planning and preparing for the application of the ventilation management plan, applying the plan, and applying ventilation system maintenance procedures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Coal Mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the application of the ventilation management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access and interpret the ***ventilation management plan*** 1.3. Identify and clarify roles and responsibilities, as specified in the ventilation management plan 1.4. Communicate and clarify work group and individual responsibilities and tasks in an effective and timely manner 1.5. Identify, obtain and allocate resources required for the application of the ventilation management plan 1.6. Identify individual training needs and provide access to the established ***ventilation management training*** program and systems
2. Apply the ventilation management plan	2.1. Identify and interpret the impact of changes to the ventilation system on the ***mine atmosphere*** 2.2. Apply installation and operation procedures for monitoring systems and equipment 2.3. Install, monitor and maintain ***ventilation control device*** in the ventilation system 2.4. Apply procedures for monitoring, recording and reporting on mine ventilation including ***defects*** to ventilation control devices 2.5. Adjust mine control devices 2.6. Carry out collection and analysis of ventilation data 2.7. Record and report monitoring system data 2.8. Apply ***water*** management procedures 2.9. Respond to alarms raised 2.10. Apply ventilation emergency and evacuation 2.11. Contribute to systems audit and review requirements
3. Apply ventilation system maintenance procedures	3.1. Schedule and carry out inspections, repair and maintenance activities

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	3.2. Record, report and review maintenance requirements and activities

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to apply and monitor the ventilation management plan:

- apply legislative, organisation and site requirements and procedures for application and monitoring of the ventilation management plan
- interpret and apply a limited range of mathematical and scientific theorems/laws related to ventilation
- collect, collate and interpret ventilation data
- interpret and apply ventilation device construction/installation specifications
- conduct enquiries/investigations and prepare reports
- communicate effectively in the workplace
- access, interpret and apply data from monitoring systems and equipment
- operate hand-held monitoring equipment
- apply risk management processes and techniques
- initiate ventilation training

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to apply and monitor the ventilation management plan:

- legislative and statutory requirements for ventilation including air quality, maximum values, control and distribution, flammable gas and dust limits, ventilation fans, gas monitoring, respirable dust limits and inspections and recording/reporting
- methods of mine ventilation and their applications/limitations
- methods of panel ventilation and their applications/limitations
- impact of mining techniques and mine and panel design on ventilation
- mine roadways and shafts and their impact on mine ventilation
- impact of geological characteristics and seam gradients on mine ventilation design
- impacts on the ventilation system of gas drainage, spontaneous combustion, outburst and windblast
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection
- dust, fumes and other particulate matter; the types, sources, physical and physiological effect and control/mitigation methods
- mine fires; the types, sources of ignition, possible effects on the ventilation circuit

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and prevention/control/mitigation methods

- mine explosions; the types, ignition sources, possible effects on the ventilation circuits and prevention/control/mitigation methods
- pressure changes; causes, the impacts on the ventilation system, and responses
- heat/humidity; the sources and factors which may impact on mine ventilation and personnel
- mine fans
- ventilation control devices
- de-gassing
- methods of control
- fixed ventilation monitoring systems types, uses and limitations
- portable monitoring equipment, types, characteristics, uses and limitations
- ventilation management plan development requirements and processes
- ventilation surveys including the types, frequency and method for conduct including pressure/quantity/temperature and gas
- dust surveys for irrespirable quantity
- processes and techniques for determining alarms and trigger points/levels
- emergency and disaster plan response

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for application and monitoring of the ventilation management plan • implementation of requirements, procedures and techniques for the safe, effective and efficient application and monitoring of the ventilation management plan • working with others to plan, prepare and conduct application and monitoring of the ventilation management plan • evidence of the consistent successful application and monitoring of the ventilation management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application and monitoring of the ventilation management plan
	  • provision of clear and timely instruction and supervision by the individual of those involved in the application and monitoring of the ventilation management plan

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures
	• standards and procedures required to support the ventilation management plan, which may include those for:
	  • construction
	  • action response
	  • permit to work
	  • condition monitoring
	  • auditing
	  • maintenance
	  • document control
	  • atmosphere monitoring
	  • ventilation system control
	  • communication systems
	  • survey procedures
	  • sealing procedures
	  • changes
	  • training and systems recording/reporting
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and Workplace Relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Ventilation management plan may include:	• establishing procedures for maintaining optimum mine ventilation including:
	  • hazard identification and quantification
	  • relevant emergency and evacuation procedures
	  • risk assessment
	  • authority and responsibility
	  • controls established to manage identified risks

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	• reporting and communication • document control • audit and review
Ventilation management training applies to:	• mine workers • trades people • permanent employees • contractors • mine officials • other relevant special requirements
Mine atmosphere includes:	• areas in the general mine district • areas into waste working • goafs in the mine and may include, but is not limited to: • temperature • gases • humidity • air flow • dust • other particulates • take out areas

Ventilation control device includes:	• door
	• regulator
	• seal
	• stopping
	• air crossings
	• pressure chambers
	• other control device to control or direct ventilation flows in a mine, and may include:
	  • doors
	  • regulators
	  • seals
	  • stoppings
	  • air crossings
	  • bulk heads
	  • goaf seals and pressure chambers
	  • air locks
	  • fans
	  • walls/barricades
	  • vent bags
	  • shafts

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	• rises
Defects may include:	• inferior design/deterioration of materials • inadequate quality of construction • physical damage • water damage
Water may impact on the mine ventilation management plan through liberation of:	• dissolved gases • capture of soluble gases and fumes • gas drainage efficiency • seam moisture infusion or drainage • dust liberation and suppression • large ingresses disrupting ventilation networks • ventilation requirements for pumping stations • influence on sponcom propensity • humidity • hydrostatic pressure

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND501A Implement the ventilation management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers implementation of the ventilation management plan in the resources and infrastructure industries. It includes planning and preparing for the implementation of the ventilation management plan, implementing the plan, implementing the maintenance of and changes to the mine ventilation system and auditing the effectiveness of the plan. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the implementation of the ventilation management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access, interpret and clarify the ***ventilation management plan*** 1.3. Identify, and communicate to all involved, roles and responsibilities as specified in the ventilation management plan 1.4. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the ventilation management plan 1.5. Identify training needs
2. Implement the ventilation management plan	2.1. Identify and interpret the impact of changes to the ventilation system on the ***mine atmosphere*** 2.2. Implement ***standards and procedures*** for the installation and operation of monitoring systems and equipment 2.3. Incorporate ventilation control devices into the ventilation system 2.4. Implement standards and procedures for inspection, monitoring, recording and reporting on mine ventilation 2.5. Implement standards and procedures for the collection and analysis of ventilation data 2.6. Process, record and report monitoring system data 2.7. Implement the ***ventilation management training*** plan 2.8. Interpret and compare measured data with relevant legislative requirements and those stipulated by the ventilation management plan and action requirements 2.9. Implement ***water*** management procedures 2.10. Respond to alarms raised 2.11. Implement emergency and evacuation procedures in accordance with the mine safety management systems
3. Implement the maintenance of	3.1. Implement inspections, repair and

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and changes to the mine ventilation system	***maintenance*** activities 3.2. Implement the system of recording, reporting and reviewing maintenance requirements and activities 3.3. Implement changes to the mine ventilation systems 3.4. Encourage, receive, review and, where appropriate implement suggestions and recommendations for changes to ventilation management procedures
4. Audit the effectiveness of the ventilation management plan	4.1. Audit ventilation specifications for compliance with legislative requirements and the ventilation management plan 4.2. Audit ventilation control devices for compliance with legislative requirements and the ventilation management plan 4.3. Audit monitoring systems operations for compliance with relevant legislative requirements and the ventilation management plan 4.4. Audit effectiveness of alarm responses and trigger levels 4.5. Audit recording systems for compliance with the ventilation management plan 4.6. Audit ventilation system maintenance standards and procedures for compliance with the ventilation management plan 4.7. Audit emergency and evacuation plans for compliance with the mine safety management system 4.8. Audit the ventilation management training plan for currency, relevance and compliance with the ventilation management plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to implement the ventilation management plan:

- apply legislative, organisation and site requirements and procedures for implementation of the ventilation management plan
- access, interpret and apply technical information
- access and analyse ventilation information related to the mine including archival and historical information
- measure air quality and quantity
- perform routine operational mathematical calculations (quantity, pressure, prediction)
- interpret and apply design criteria for ventilation systems and devices
- interpret computer spreadsheets and ventilation modelling/simulations
- collect, collate and interpret ventilation data
- conduct enquiries/investigations and prepare reports
- communicate effectively in the workplace
- access, interpret and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- implement the ventilation management training plan
- apply risk management processes and techniques
- implement emergency response and evacuation procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to implement the ventilation management plan:

- legislative and site requirements for ventilation including:
  - air quality and quantity
  - maximum and minimum values
  - control and distribution
  - flammable gas and dust limits
  - ventilation fans
  - gas monitoring
  - respirable dust limits
  - inspections

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- recording/reporting
- methods of mine ventilation and their applications/limitations including:
  - exhaust/force
  - antitropal
  - homotropal
  - flank returns
  - ascensional/descensional
  - bleeder
  - Z/U/Y systems
  - other combinations
- methods of panel ventilation and their applications/limitations including:
  - homotropal and antitropal auxiliary fans
  - coursed ventilation (narrow side/wide side)
  - machine mounted scrubber systems
  - compressed air venturis and bleeders
- impact of mining techniques
- impact of mine and panel design on ventilation
- mine roadways and shafts and their impact on mine ventilation
- impact of material characteristics and seam gradients on mine ventilation design
- impacts on ventilation system of gas drainage, spontaneous combustion, outburst and windblast
- mine gases; types and characteristics, sources, physiological effects and methods of detection
- dust, fumes and other particulate matter; the types, sources, physical and physiological effect and control/mitigation methods
- mine fires; the types, sources of ignition, possible effects on the ventilation circuit and prevention/control/mitigation methods
- mine explosions; types, ignition sources, possible effects on the ventilation circuits and prevention/control/mitigation methods
- pressure changes; causes, impacts on the ventilation system, and responses (to include the causes and effects of natural ventilation and re-circulation)
- heat/humidity; sources and factors which may impact on mine ventilation and personnel
- mine fans including:
  - fan types
  - applications
  - limitations
- ventilation control devices; types, purposes, design criteria and specifications, distribution/placement criteria and limitations
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders
- fixed ventilation monitoring systems types, uses and limitations

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- portable monitoring equipment, types, characteristics, uses and limitations
- functions, capabilities, advantages, limitations and use of computer modelling tools and simulation techniques
- basic computer-based systems used for mine ventilation monitoring and analysis
- ventilation management plan development requirements and processes
- ventilation surveys; the types, frequency and method for conducting including pressure/quantity/temperature and gas
- respirable dust survey requirements
- processes and techniques for determining alarms and trigger points/levels
- audit and review processes and techniques
- site document control requirements
- emergency preparedness and plan response/measures
- airway resistance and fan curves and duty points
- general use and application of ventilation theory including:
  - psychrometry and heat
  - gas laws including Charles and Boyle
  - natural ventilation pressures
  - air quality measurement
  - control device leakage
  - duct leakage
  - regulator
  - equivalent office calculation and Kirchoff's laws

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for implementation of the ventilation management plan • implementation of procedures and techniques for the safe, effective and efficient implementation of the ventilation management plan • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of processes for the implementation of the ventilation management plan that best meet the required outcomes • working with others to undertake and complete the implementation of the ventilation management plan • consistent successful implementation of the ventilation management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of the ventilation management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of processes for the implementation of the ventilation management plan that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:

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	• working with others to undertake and complete the implementation of the ventilation management plan • provision of clear and timely required support and advice on the implementation of the ventilation management plan
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Ventilation management plan may include:	• establishing procedures for maintaining optimum mine ventilation including:
	  • hazard identification and quantification
	  • emergency and evacuation procedures
	  • risk assessment
	  • authority and responsibility
	  • controls established to manage identified risks
	  • reporting and communication
	  • document control
	  • audit and review specifications

Mine atmosphere includes:	• atmosphere in all areas in the general mine ventilation district and beyond into waste working and goafs in the mine
Standards and procedures include:	• construction • action response • permit to work • condition monitoring • auditing • maintenance • document control • atmosphere monitoring • ventilation system control • communication systems • survey procedures • sealing procedures

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	• changes • training • systems recording/reporting
Ventilation management training may include:	• mine workers • trades people • permanent employees • contractors • mine official • other special requirements

Water may:	• impact on the mine ventilation management plan through
	  • liberation of dissolved gases
	  • capture of soluble gases and fumes
	  • gas drainage efficiency
	  • seam moisture infusion or drainage
	  • dust liberation and suppression
	  • large ingresses disrupting ventilation networks
	  • ventilation requirements for pumping stations
	  • influence on sponcom propensity
	  • humidity
	  • hydrostatic pressure

Maintenance may include:	• inspection • servicing • repair

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND601A Establish and maintain the ventilation management system

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintenance of the ventilation management system in the resources and infrastructure industries. It includes identifying, analysing and evaluating: hazards associated with the mine atmosphere, events which impact on ventilation and mine ventilation control options and measures. It also includes design and development of the ventilation management system, establishment of the ventilation management plan, planning and preparing for the implementation of the plan, and auditing and reviewing the plan. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify, analyse and evaluate hazards associated with mine atmosphere	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and evaluate the sources and hazards of dust, gases and fumes 1.3. Identify, analyse and evaluate the likely impact of gas drainage 1.4. Identify, analyse and evaluate the ***hazards of spontaneous combustion***, ***fire and explosion*** 1.5. Identify, analyse and evaluate the impact of ventilation pressure differentials 1.6. Identify, analyse and evaluate the effect of changes in air ***temperature***, ***pressure and humidity***
2. Identify, analyse and evaluate events which impact on ventilation	2.1. Identify and evaluate the impact of disruption to the ***ventilation system*** 2.2. Identify and evaluate the causes and ***effects of re-circulation*** 2.3. Identify, analyse and evaluate the potential for and likely impact of windblast 2.4. Identify, analyse and evaluate the potential for and likely impact of outburst 2.5. Identify, analyse and evaluate the impacts of holing into previous workings 2.6. Identify, analyse and evaluate the impact of ***water*** 2.7. Identify, analyse and evaluate the potential for, and likely impact of spontaneous combustion, ***fires*** and explosion
3. Identify, analyse and evaluate mine ventilation control options and measures	3.1. Identify, analyse and evaluate the types, applications and limitations of the ***ventilation control devices*** 3.2. Identify and evaluate the ***impact of mine design on the ventilation system*** 3.3. Identify and evaluate the methods, purposes and limitations of mine monitoring systems and processes
4. Design and develop the ventilation management system	4.1. Access, interpret and clarify the legislative and site requirements related to ventilation management

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	4.2. Incorporate the principles and requirements of mine ventilation including the effects of ***mine gases*** into the design and development of the ventilation system 4.3. Identify design criteria and specification for ventilation networks and incorporate into the design and development of the mine ventilation system 4.4. Identify, evaluate and incorporate the requirement for mine fans into the design and development of the ventilation system 4.5. Evaluate ventilation control device options against requirements and incorporate into the design and development of the ventilation system 4.6. Incorporate ventilation and environmental monitoring systems into the design and development of the ventilation system
5. Establish the ventilation management plan	5.1. Establish and incorporate mine ventilation objectives, systems descriptions and responsibilities into the ***ventilation management plan*** 5.2. Establish procedures for the installation, operation and ***maintenance of ventilation monitoring systems*** in the ventilation management plan 5.3. Prepare and establish procedures for the installation, operation and changes to ventilation control devices in the ventilation management plan 5.4. Determine trigger levels for each hazard and incorporate into the ventilation management plan 5.5. Establish a ventilation system maintenance program and procedures and incorporate into the ventilation management plan 5.6. Incorporate audit, review and update procedures for the ventilation systems into the ventilation management plan 5.7. Establish a program including systems and procedures to satisfy identified ***ventilation management training*** requirements 5.8. Establish a procedure for planning, controlling, implementing, recording and communicating changes to mine ventilation

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	systems and components and incorporate into the ventilation management plan
6. Plan and prepare for the implementation of the ventilation management plan	6.1. Identify and interpret the legislative and site requirements related to the ventilation management plan 6.2. Access and interpret the ventilation management plan 6.3. Identify, clarify and communicate to all personnel roles and responsibilities as specified in the ventilation management plan 6.4. Identify, forecast, obtain and allocate/schedule resources required for the implementation of the ventilation management plan 6.5. Implement the ventilation management training program 6.6. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to ventilation management implementation procedures
7. Audit and review the ventilation management plan	7.1. Audit ventilation standards for compliance with relevant legislative and ventilation management plan specifications 7.2. Audit ventilation control devices for compliance with relevant legislative and ventilation management plan requirements 7.3. Audit monitoring systems for compliance with relevant legislative and ventilation management plan standards 7.4. Audit ventilation recording systems for compliance with the ventilation management plan 7.5. Audit ventilation system maintenance program and procedures for compliance with the ventilation management plan 7.6. Audit the ventilation management training program for currency, relevance and compliance with the requirements of the ventilation management plan 7.7. Audit and review the planning process of future ventilation requirements 7.8. Identify and correct non-compliance or other discrepancies/deficiencies revealed by

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	audit

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to establish and maintain the ventilation management system:

- apply legislative, organisation and site requirements and procedures for establishment and maintenance of the ventilation management system
- access, interpret and apply technical information
- access and analyse archival and historical ventilation information related to the mine
- interpret and apply mathematical and scientific theorems/laws related to ventilation
- perform ventilation planning mathematical calculations
- access, evaluate and apply design criteria for ventilation systems and devices
- interpret computer spreadsheets and ventilation modelling/simulations
- collect, collate and evaluate ventilation data
- establish technical procedures relating to ventilation
- conduct enquiries/investigations and prepare reports
- communicate effectively in the workplace
- access, evaluate and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- establish ventilation training requirement, programs, systems and procedures
- apply risk management processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to establish and maintain the ventilation management system:

- legislative and site requirements for ventilation including air quality, maximum and minimum values, control and distribution, flammable gas and dust limits, ventilation fans, gas monitoring, respirable dust limits and inspections and recording/reporting
- methods of mine ventilation and their applications/limitations including exhaust/force, antitropal, homotropal, flank returns, ascensional/descensional, bleeder, ZUY systems and other combinations
- methods of panel ventilation and their applications/limitations including homotropal and antritropal auxiliary fans, coursed ventilation (narrow side/wide side), machine mounted scrubber systems, compressed air venturis and bleeders
- impact of mining techniques and mine and panel design on ventilation

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- impact of coal characteristics and coal seam gradients on mine ventilation design
- principles and impacts of the ventilation system of gas drainage, spontaneous combustion, outburst and windblast
- mine gases; the types and their characteristics under varying circumstances, sources, physiological effects and methods of detection
- dust, fumes and other particulate matter; the types, sources, physical and physiological effect, and control/mitigation methods
- mine fires; the types, sources of ignition, possible effects on the ventilation circuit and prevention/control/mitigation methods
- mine explosions; types, ignition sources, possible effects on the ventilation circuit and prevention/control/mitigation methods
- pressure changes; causes, the impacts on the ventilation system, and responses (to include the causes and effects of natural ventilation and recirculation)
- heat/humidity; the sources and factors which may impact ventilation and personnel
- mine roadways and shafts; their design parameters and impact of mine ventilation
- mine fans; fan laws, fan types, performance characteristics, configurations, applications and limitations
- ventilation control devices; the types, purposes, design criteria and specifications, distribution/placement criteria and limitations
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders
- ventilation networks and individual circuit design criteria, specifications and design processes
- fixed ventilation monitoring systems types, characteristics, uses and limitations
- portable monitoring equipment, types, characteristics, uses and limitations
- functions, capabilities, advantages, limitation and uses of computer modelling and simulation techniques
- computer-based systems for mine environmental analysis
- ventilation management plan development requirements and processes
- ventilation surveys; the types, frequency and method for conducting including pressure/quantity/temperature and gas/dust
- processes and techniques for determining alarms and trigger points/levels
- audit and review processes and techniques
- emergency response and disaster planning processes and techniques
- general uses and application of ventilation theory, including: Atkinson's equation, methods of determining frictional resistance, frictional resistance values for mine airways and ducts, psychrometry and heat, gas laws including universal gas law, natural ventilation pressures, static/velocity/total pressures and shock loss, control device leakage, duct leakage, determination of mine resistance curves, combining system resistance and fan curves, regulator and equivalent orifice calculation, determination of fan operating/duty points and Kirchoff's laws

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishing and maintaining the ventilation management system • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of the ventilation management system • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options for establishment and maintenance of the ventilation management system that best meet the required outcomes • working with others to undertake and complete the establishment and maintenance of the ventilation management system • consistent successful establishment and maintenance of the ventilation management system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection

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	and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in the establishment and maintenance of the ventilation management system
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification and selection of viable options for the establishment and maintenance of the ventilation management system that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the

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	candidate's: • working with others to undertake and complete the establishment and maintenance of the ventilation management system • provision of clear and timely required support and advice on the establishment and maintenance of the ventilation management system
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Hazards of spontaneous combustion, **fires and explosion** may include:	• noxious and flammable gases • heat • contaminants • altered ventilation pressures/flows • direct physical impacts and weakening of the strata • complete disruption to the ventilation system
Temperature, **pressure and humidity** may be impacted by:	• climate conditions • ventilation quantities • location of workplaces • mine layout and design • location of mine entries • depth • adjacent strata type • number and types of machinery • seam gas composition under varying temperatures and pressures
Ventilation system may include:	• waste and sealed areas and all surface and underground fans and ventilation devices which control or impact on the mine ventilation
Effects of re-circulation may include:	• a build up of contaminant concentration (gas, fumes, dust, heat) and a decrease in oxygen
Water may:	• impact on the mine ventilation management plan through: • liberation of dissolved gases

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	• capture of soluble gases and fumes • gas drainage efficiency • seam moisture infusion or drainage • dust liberation and suppression • large ingresses disrupting ventilation networks • ventilation requirements for pumping stations • influence on spontaneous combustion propensity • humidity and hydrostatic pressure
Fires may include:	• solid • liquid • gas • metals
Ventilation control devices may include:	• doors • regulators • seals • stoppings • air crossings • bulk heads • goaf seals and pressure chambers • air locks • fans
Impact of mine design on the ventilation system may include:	• surface access • mining method/rate • barrier pillars and segregation of roadways • system of mining • bleeder or back returns • number of headings • bleeders • geological features
Mine gases may include:	• gases from other introduced sources such as: • methane • carbon dioxide • carbon monoxide • oxides of nitrogen • hydrogen • sulphur dioxide • hydrogen sulphide • hydrocarbons

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	• contaminations • oxygen • nitrogen
Ventilation management plans establish procedures for maintaining optimum mine ventilation including:	• mine hazard identification and quantification • emergency and evacuation procedures • risk assessment • authority and responsibility • controls established to manage identified risks • reporting and communication • document control • audit and review
Maintenance of the ventilation monitoring system may include:	• inspection • servicing • repair
Ventilation management training applies to:	• mine workers • tradespeople • permanent employees • contractors • mine officials • other specific requirements

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND602A Establish and maintain mine services systems

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintenance of mine service systems in the resources and infrastructure industries. It includes designing mine services systems, selecting equipment for mine services systems, establishing installation and commissioning procedures, establishing systems for the operation and maintenance of mine service systems and equipment, planning and preparing for the implementation of systems for the operation and maintenance of mine services systems and equipment, and establishing systems for audit and review of mine services systems and equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Design mine services systems	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify the requirements for, and purpose of, ***mine services systems*** in accordance with relevant legislative requirements and the system of mining 1.3. Develop a ***specification*** for the mine services system from a comprehensive analysis of site requirements 1.4. Identify system options from an analysis of all relevant technical, operational and financial information 1.5. Select the preferred service systems options, including ***reticulation*** on the basis of performance against specification requirements
2. Select equipment for mine services systems	2.1. Identify the requirements for, and purpose of, mine services equipment against systems requirements 2.2. Conduct a detailed scoping of the work requirements and develop key selection criteria, including hazard identification and risk analysis 2.3. Develop a specification for the required mine services equipment 2.4. Select the preferred equipment solutions on the basis of performance against specification requirements
3. Establish installation and commissioning procedures	3.1. Establish a procedure to identify hazards and analyse and evaluate risks associated with the installation of mine services systems and equipment 3.2. Plan and prepare for the integration of new and existing systems and processes to achieve optimum performance 3.3. Develop safe operating procedures and rules from a detailed analysis of site requirements 3.4. Develop and establish procedures for installing and commissioning mine services systems and equipment

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	3.5. Establish a program, including systems and procedures, to satisfy identified mine services training requirements 3.6. Establish ***emergency response*** and evacuation systems, plans and procedures 3.7. Establish ***protection systems***
4. Establish systems for the operation and maintenance of mine services systems and equipment	4.1. Develop operational procedures for mine services systems and equipment from site and legislative requirements and incorporate into ***site documentation*** 4.2. Develop maintenance procedures for mine services systems and equipment from site and legislative requirements and incorporate into site documentation 4.3. Develop and establish procedures for reviewing and modifying work processes
5. Plan and prepare for the implementation of systems for the operation and maintenance of mine services systems and equipment	5.1. Identify and interpret the relevant legislative and site requirements related to the operation and maintenance of mine services systems and equipment 5.2. Access, interpret and clarify mine services systems and equipment procedures 5.3. Identify, clarify and communicate to all personnel roles and responsibilities, as specified in mine services systems and equipment procedures 5.4. Identify, forecast, obtain and allocate/schedule resources required for the implementation of mine services systems and equipment procedures 5.5. Implement the mine services systems and equipment procedures training program. 5.6. Encourage, receive, review and, where appropriate, implement suggestions and recommendations for changes to the operation and maintenance of mine services systems and equipment procedures
6. Establish systems for audit and review of mine services systems and equipment	6.1. Establish procedures to evaluate and confirm system/equipment compliance with legislative and site requirements 6.2. Identify, assess future mine services systems and equipment requirements and incorporate into planning processes 6.3. Establish procedures to confirm the

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	currency and compliance of mine services maintenance and safety standards 6.4. Establish the system for ***recording and reporting*** of mine services and equipment information 6.5. Audit the mine services training program for currency and relevance 6.6. Establish procedures for incorporating feedback into the audit/review system 6.7. Audit emergency response and evacuation systems, plans and procedures for compliance with site requirements 6.8. Establish procedures for response to instances of non compliance or other discrepancies/deficiencies revealed by audit

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to establish and maintain mine services systems:

- access, interpret and apply technical information
- apply legislative, organisation and site requirements and procedures for establishment and maintenance of mine services systems
- site/legislative requirements
- records and reports
- briefings and handover details
- apply the principles of mine design
- assess the risks and consequences attached to mine services systems and equipment
- plan and coordinate work
- identify training needs related to mine services systems
- interpret and apply manufacturer's instructions
- conduct maintenance surveys

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to establish and maintain mine services systems:

- audit review processes and techniques
- computer based systems
- emergency response and disaster planning processes and techniques
- fire fighting systems and precautions
- legislative and site specific requirements for mine services including:
  - mine plans
  - electrical distribution
  - ventilation
  - compressed air
  - electrical/mechanical equipment
  - inspection requirements
  - environmental management
  - communication
  - emergency procedures

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- risk management
- recording and reporting
- mines rescue
- OHS
- manufacturer's instructions
- standard work procedures
- training
- maintenance surveys
- mine design relating to mine services systems
- mine operating procedures including those applying to transport systems, conveyor systems, systems of mining, ventilation system, gas management and mine water management
- power sources including electrical, hydraulic, compressed air, diesel
- safety design features for maintenance of mine services systems
- safety design features of mine services systems
- stores systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for establishment and maintenance of mine services systems • implementation of procedures and techniques for the safe, effective and efficient establishment and maintenance of mine services systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of methods for the establishment and maintenance of mine services systems that best meet the required outcomes • working with others to establish and maintain mine services systems • consistent successful establishment and maintenance of mine services systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking the establishment and maintenance of mine services systems
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of methods for the establishment and maintenance of mine services systems that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and

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	complete the establishment and maintenance of mine services systems • provision of clear and timely support and advice on the establishment and maintenance of mine services systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisation and site requirements which may be contained in:
	  • relevant legislation and regulations
	  • relevant Australian standards
	  • management plans
	  • safety and health policy
	  • relevant code of practice
	  • manufacturer's instruction
	  • standard/safe working procedures
	  • industry guidelines
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Mine services systems may include:	• design
	• development
	• establishment
	• installation
	• operations
	• protection
	• maintenance
	• monitoring
	• recording
	• reporting process
	• communication systems including:
	  • oral
	  • phones/radios
	  • electronic
	  • microwave
	  • telemetry

Mine services may include:	• power (air, gas, electricity, water, diesel, low energy source) • water, wastewater • fire fighting

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	• gas drainage
	• fuel
	• waste disposal
	• condition monitoring
	• dust suppression and refrigeration
	• safety services including:
	  • risk assessment process
	  • fire fighting
	  • First Aid
	  • mines rescue

Specification may include:	• performance requirements • costs • dimensions • capacity • safety and health requirements • training requirements • key selection criteria
Reticulation may include:	• water management • pumping of solids • fluid reticulation and storage • material reticulation and storage (hydraulic, electric, water and compressed air)
Emergency response systems may include:	• refuge chamber • designated escape ways • evacuation procedures • alarm systems • guidance systems • emergency communication systems • self-aided escape apparatus • mines rescue capability
Protection systems may include:	• explosion barriers • electrical protection • compressed air protection • hydraulic protection • environment protection • falling and roll-over protection • mechanical protection • frictional ignition protection • guarding • personal protection

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Site documentation may include:	• relevant legislative and legislative requirements • management plans and procedures • training policy
Recording and reporting systems may include:	• phones • radios • computer systems • verbal • written
Support systems may include:	• mine plan • signage • stores system • roadway • development drives and openings • maintenance • drilling (raise boring and bore hole) • emergency response systems

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIUND603A Manage, operate and maintain the mine ventilation system

Modification History

Not applicable.

Unit Descriptor

This unit covers the management, operation and maintenance of the mine ventilation system in the resources and infrastructure industries. It includes identifying, analysing and evaluating hazards and risks associated with the mine ventilation system and ventilation control options and measures. It also includes contributing to the development and maintenance of the mine ventilation management plan, implementing mine ventilation monitoring, recording and reporting systems and coordinating and controlling the maintenance of and changes to, the mine ventilation system. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a management or supervisory role at worksites within:

- Coal mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify, analyse and evaluate hazards and risks associated with the mine ventilation system	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify, analyse and evaluate the sources, hazards and risks of ***gases*** and fumes 1.3. Identify and evaluate the likelihood and risks of ***spontaneous combustion*** 1.4. Identify, analyse and evaluate the hazards and risks of ***airborne*** and flammable dust 1.5. Identify, analyse and evaluate the potential for the likely impact of wind blast and ***outburst*** on the ***ventilation system*** 1.6. Identify, analyse and evaluate the ***impacts of fire***, ***ignition and explosion*** on the ventilation system 1.7. Identify, analyse and evaluate the potential for the impact of the ***ventilation pressure differentials*** 1.8. Identify, analyse and evaluate the effect of changes in air ***temperature and humidity*** 1.9. Identify, analyse and evaluate the causes and effects of ***re-circulation*** 1.10. Identify, analyse and evaluate the impact associated with disruption to the ventilation system 1.11. Identify, analyse and evaluate the impacts of holing into previous workings
2. Identify, analyse and evaluate ventilation control options and measures	2.1. Identify, analyse and evaluate the types, applications and limitations of the ***ventilation control devices*** 2.2. Identify, analyse and evaluate the ***impact of mine design on ventilation system*** 2.3. Identify, analyse and evaluate the methods, purposes and limitations of mine ***monitoring*** systems and processes 2.4. Identify, analyse and evaluate ***inertisation techniques*** and applications 2.5. Identify, analyse and evaluate the impact of seam gas management on the ventilation system 2.6. Identify, analyse and evaluate the impact of water management on the ventilation

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	system
3. Contribute to the development and maintenance of the mine ventilation management plan	3.1. Identify, analyse and confirm the objectives and criteria for safe and effective ventilation 3.2. Incorporate the principles and requirements of mine ventilation into the mine development plan 3.3. Identify, analyse and evaluate the requirements for mine ***fans*** and make appropriate selections 3.4. Evaluate and apply design criteria and specifications for ventilation networks and individual circuits 3.5. Evaluate ventilation control device options against requirements and select best option 3.6. Establish design criteria for ventilation and environmental monitoring systems and make appropriate selections 3.7. Prepare and incorporate procedures for the installation, establishment and operation of ventilation management systems into the ***ventilation management plan*** 3.8. Develop a system for early warning for each identified hazard including ***action*** requirements for each event and incorporate into the ventilation management plan 3.9. Formulate and implement ***maintenance*** program and procedures as part of the ventilation management plan 3.10. Incorporate procedures for the ***audit***, review and updating of the ventilation system into the ventilation management plan 3.11. Identify ***ventilation training*** requirements and incorporate into the ventilation management plan
4. Implement mine ventilation monitoring, recording and reporting systems	4.1. Implement procedures for monitoring, recording and reporting on the ventilation system according to statutory requirements and those of the ventilation management plan 4.2. Implement procedures for the installation and operation of monitoring systems and equipment

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	4.3. Implement procedures for the collection and analysis of ventilation data 4.4. Process, record and report monitoring system data in accordance with the requirements of the ventilation management plan 4.5. Interpret measured data and compare with statutory requirements and those stipulated by the ventilation management plan and action requirements implemented 4.6. Include the periodic review of ***alarm*** settings and alarms raised in the ventilation management plan and implemented
5. Coordinate and control the maintenance of and changes to the mine ventilation system	5.1. Review, confirm and communicate the ventilation system maintenance program to responsible parties 5.2. Coordinate maintenance activities, including inspections, repair and maintenance 5.3. Implement the system of recording and reporting maintenance requirements and activities 5.4. Plan, control and implement changes to the ventilation system 5.5. Prepare and maintain mine ventilation plans in accordance with statutory requirements and mine standards
6. Audit and review the effectiveness of the mine ventilation system	6.1. Audit the effectiveness of the ventilation system in accordance with the ventilation management plan 6.2. Ensure that ventilation control devices comply with statutory and ventilation management plan requirements 6.3. Ensure that ventilation standards comply with statutory and ventilation management plan specifications 6.4. Operate mine monitoring systems 6.5. Maintain ventilation recording systems accurately and process data 6.6. Implement and record ventilation system maintenance program and procedures 6.7. Communicate the content of the ventilation management plan to the workforce and ensure that it is understood

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	6.8. Review the ventilation system in accordance with the ventilation management plan 6.9. Ensure that the emergency plans are consistent with the ventilation management plan 6.10. Ensure that the ventilation standards remain appropriate 6.11. Ensure that the training of mine employees is current, relevant and is conducted 6.12. Identify, assess and incorporate future ventilation requirements into the ventilation planning procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to manage, operate and maintain the mine ventilation system:

- apply legislative, organisation and site requirements and procedures for management, operation and maintenance the mine ventilation system
- access, interpret and apply technical information
- access and analyse archival and historical ventilation information related to the mine
- interpret and apply mathematical and scientific theorems/laws related to ventilation
- interpret and apply design criteria for ventilation systems and devices
- interpret computer spreadsheets and ventilation modelling/simulations
- collect, collate and interpret ventilation data
- prepare technical procedures relating to ventilation
- conduct enquiries/investigations and prepare reports
- communicate effectively in the workplace
- access data from monitoring systems and equipment
- operate hand held monitoring equipment
- analyse and report on ventilation training needs
- apply risk management reports processes and techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to manage, operate and maintain the mine ventilation system:

- legislative and statutory requirements for ventilation including air quality, maximum values, control and distribution, flammable gas limits, ventilation fans, gas monitoring, dust limits and inspections and recording/reporting
- methods of mine ventilation and their applications/limitations including exhaust/force, antitropal, homotropal, flank returns, ascensional/decensional, bleeder, ZUY systems and other combinations
- methods of panel ventilation and their applications/limitations including homotropal and antitropal (and in conjunction with these, the use of goaf bleed or back return), auxiliary fans, coursed ventilation (narrow side/wide side), machine mounted scrubber systems, compressed air venturi and bleeders
- impact of mining techniques and mine and panel design on ventilation
- inertisation techniques and applications including pressure swing absorption,

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natural oxidation, evaporative and pumped liquefied inert gas, seam gas, exhaust gases (Thomlinson boiler or jet engine) and water

- impact of differing geological features and conditions on ventilation including faults, dykes, intrusions and strata deformities
- impact of coal characteristics and coal seam gradients on mine ventilation design
- effects of ventilation on the spontaneous combustion risk
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection
- dust and other particulate matter; the types, sources, physical and physiological effect, and control/mitigation methods
- mine fires; the types, sources of ignition, possible effects on the ventilation circuit and prevention/control/mitigation methods
- mine explosions; the types, ignition sources, possible effects on the ventilation circuits and prevention/control/mitigation methods
- pressure changes; causes, the impacts on the ventilation system, responses (to include the causes and effects of natural ventilation and re-circulation)
- heat, humidity; the sources and factors which may impact on mine ventilation and personnel
- mine roadways and shafts; their design parameters and impact on mine ventilation
- mine fans; fan laws, fan types, performance characteristics, configurations, applications and limitations
- ventilation control devices; the types, purposes, design criteria and specifications, distribution/placement criteria and limitations
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders
- ventilation networks and individual circuit design criteria, specifications and design processes
- fixed ventilation monitoring systems types, uses/limitations , design criteria, specifications and design processes
- portable monitoring equipment, types, uses/limitations, design criteria and specifications
- the use of computer modelling and simulation techniques and applications relevant to mine ventilation planning; their functions, capabilities, advantages and limitations
- computer-based systems for mine environment analysis
- ventilation management plan development requirements and processes
- ventilation surveys; the types, frequency and method for conducting including pressure/quantity/temperature and gas/dust
- processes and techniques for determining alarms and trigger points/levels
- audit and review processes and techniques
- emergency response and disaster planning process and techniques
- analytical and interpretive processes for gas mixtures and flammability including coward triangle, Ellicott diagram, gas make calculations and post explosion gases
- applied ventilation theory including:

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- Atkinson's equation
- methods of determining frictional resistance
- frictional resistance values for mine airways and ducts
- psychrometry and heat
- gas laws including Charles, Boyle and Dalton
- air density calculations
- natural ventilation pressures
- static velocity total pressures and shock loss
- leakage
- duct leakage
- determination of mine resistance curves
- combining system resistance and fan curves
- regulator and equivalent orifice calculation
- determination of fan operating/duty points
- Kirchoff's law

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for management, operation and maintenance of the mine ventilation system • implementation of procedures and techniques for the safe, effective and efficient management, operation and maintenance of the mine ventilation system • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options for the management, operation and maintenance of the mine ventilation system that best meet the required outcomes • working with others to undertake and complete the management, operation and maintenance of the mine ventilation system • consistent successful management, operation and maintenance of the mine ventilation system
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the management, operation and maintenance of the mine ventilation system
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options for the management, operation and maintenance of the mine ventilation system that best meet the required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and

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	complete the management, operation and maintenance of the mine ventilation system • provision of clear and timely required support and advice on the management, operation and maintenance of the mine ventilation system
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures
	• mine safety management plans (ventilation, spontaneous combustion, gas, outburst) which establish procedures for maintaining a safe environment including:
	  • hazard identification and quantification
	  • risk assessment
	  • authority and responsibility
	• controls established to manage identified risks (mine design, monitoring, procedures, trigger levels and response plans)
	  • reporting and communication
	  • document control
	  • audit and review
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Gases may include:	• seam gases or gases from other introduced sources and may include:
	  • methane
	  • carbon dioxide
	  • carbon monoxide
	  • oxides of nitrogen
	  • hydrogen
	  • sulphur dioxide
	  • hydrogen sulphide
	  • hydrocarbons
	  • contaminations

Spontaneous combustion hazards may include:	• potential ignition sources • flammable gases • fire

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	• explosion
	• irrespirable atmosphere
	• noxious atmosphere
	• smoke
	• roof collapse
	• reversal of ventilation
	• water/gas
	• mechanisms which contribute to spontaneous combustion and may include:
	  • coal seam characteristics
	  • ventilation pressure difference
	  • mining system
	  • mine design
	  • humidity
	  • temperature
	  • moisture
	• physical spontaneous combustion indicators may include:
	  • smoke
	  • haze
	  • sweating
	  • smell
	  • temperature
	• gaseous spontaneous combustion indicators may include:
	  • carbon monoxide
	  • hydrogen and hydrocarbons
	  • indicator ratios such as:
	• CO make
	• Graham's radio
	• other ratios as determined suitable

Airborne contaminants may include:	• respirable and combustible dust
Outburst hazards may include:	• ejection of materials • asphyxiant • toxic or flammable gas mixtures • entrapment • roof falls • ventilation disruption • mechanisms which contribute to an outburst

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	may include: • maceral composition • depth of cover • gas content and composition • porosity • permeability • geology • stress • mining rate • outburst detection methods may include: • geological mapping • long-hole drilling • gas sampling • micro-seismic detection • changing face conditions and gas emission rates • outburst amelioration measures may include: • pre-drainage • methods of work
Ventilation system is:	• one which covers all the mine workings, including waste and sealed areas, and it includes all surface and underground fans and ventilation devices which control or impact on the mine ventilation • methods of ventilation may include: • exhaust/force • antitropal • homotropal • flank returns • ascensional/decensional • bleeder • ZUY systems • other combinations
Impacts of fire, **ignition and explosion** may include:	• contaminants • altered ventilation pressures/flows • direct physical impacts • complete disruption to the ventilation system
Fire may include:	• solid • liquid • gas

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	• metals

Ignition is:	• the rapid chemical reaction of a combustible material with oxygen when exposed to sufficient heat
	• ignition sources may include:
	  • electrical
	  • friction
	  • contraband
	  • spontaneous combustion
	  • naked flame
	  • chemical
	  • explosives

Explosion is:	• the sudden release of energy generated from the confinement of the rapid volumetric expansion of an ignition
Ventilation pressure differentials may include those resulting from:	• changes in barometric pressure • fall of ground • fan changes/failure • ventilation control devices changes/failure • outburst • holing into previous workings • re-circulation • ventilation circuit changes • natural ventilation pressure changes • explosions • changes in ambient temperature/humidity • fires • equipment moves

Temperature and humidity may by impacted by:	• climatic conditions
	• ventilation quantities
	• location of workplaces
	• mine layout and design
	• location of mine entries
	• depth
	• adjacent strata type
	• seam gas composition
	• sources of heat/humidity may include:
	  • strata
	  • equipment
	  • oxidation
	  • fire/spontaneous combustion

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	• auto compression • exothermic chemical reactions • seam moisture content

Re-circulation causes may include or be related to:	• the underground auxiliary/booster fans
	• scrubber systems
	• leaking ducts
	• failure or poor design of ventilation system
	• ventilation velocity pressures
	• natural ventilation pressures
	• gas densities
	• layering and wind blast
	• effect of re-circulation may include:
	  • build up of contaminant concentration (gas, dust, heat)
	  • decrease in oxygen

Ventilation control devices may include:	• doors
	• regulators
	• seals
	• stoppings
	• air crossings
	• bulk heads
	• goaf seals
	• pressure chambers
	• other control device to control or direct ventilation flows in a mine
	• factors which impact on the selection of ventilation control systems may include:
	  • the life of the installation
	  • ground conditions (stress/heave)
	  • operating duty (pressure/quantity)
	  • mining method
	  • design
	  • explosion rating
	  • statutory requirements
	  • water
	  • seam gas (make/composition)
	• criteria for safe mine ventilation may include:
	  • statutory and regulatory requirements
	  • mine ventilation management plan
	  • measures to reduce and/or control seam gas
	  • introduced gas, fumes and dust

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	• temperature/humidity and maximum/minimum velocity specifications • criteria for ventilation efficiency • defects to ventilation devices may include: • inferior design • deterioration of materials • inadequate quality of construction • physical damage • water damage
Impact of mine design on the ventilation system may be related to:	• surface access • mining method/rate • barrier pillars and segregation of roadways • systems of mining • bleeder or back returns • number of headings • bleeders • geological features • principles of mine design include: • reserve optimisation • mining direction • geological structures • ventilation • strata control • mining method • productivity • environmental considerations • seam access
Monitoring may include:	• tube bundle • real time telemetry • portable (hand held) monitoring • bag samples • gas chromatography • fire monitoring • condition monitoring of ventilation devices • design criteria for fixed monitoring systems/equipment may include: • contingency for power outage • alarms for process faults including PC/PLC failure • analyser/sensor failure

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	• communication failure • alarm system latching • alarm system fail-safe requirement • alarm/sensor likely gas matrix determination requirement • required ranges and accuracies • provision for calibration • statutory compliance • surface analysers combined gas monitoring capabilities • logistic and maintenance support • design criteria for portable monitoring equipment may include: • battery capacity (full shift) • battery recharge requirements • statutory compliance • required ranges and accuracies • provision for calibration • size • weight • light facility • ease of operation • robust construction
Inertisation techniques may include:	• pressure swing absorption • natural oxidation • evaporative and pumped liquefied inert gas • seam gas • exhaust gases (Thomlinson Boiler or jet engine) • water • inertisation may be defined as the displacing or reducing of oxygen to a level that will not support combustion. It may be either a natural process using seam gases or a process of introducing inert gases
Fans may include:	• axial flow • centrifugal • fan design considerations may include: • types • mine layout • user requirements and fan laws • characteristics

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	• duty control (speed/variable pitch) • configuration (parallel/series) • explosion/protection doors • dampers • auxiliary drive • restart procedures • maintenance requirements
Action (alarm or trigger) is:	• a generic term used to describe an event determined at the mine site at which action is initiated or a response made
Procedures required to support the **ventilation management plan** may include those for:	• construction • action response • permit to work • condition monitoring • auditing • maintenance • document control • atmosphere monitoring • ventilation system control • communication systems • survey procedures • sealing procedures • changes • training • recording/reporting
Maintenance of the ventilation system may include:	• inspection • servicing repair
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation's policy and objectives (AS/NZS 4804: 2001)
Ventilation training may include:	• include induction • basic miner • deputy and ventilation systems operators/special requirements
Alarm systems and action plans may include those for:	• gas concentration/make • spontaneous combustion (physical and gaseous) • combustion indicators

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	• condition monitoring for fans (vibration/temperature/current/failures) • ventilation devices • monitoring hardware
Mine atmosphere refers to:	• all areas in the general mine ventilation district and beyond into waste working goafs/gobs in the mine
Geological conditions may include:	• faults • dykes • intrusions • strata deformities
Coal seam characteristics may include inherent factors such as:	• rank • petrology • moisture • cleat • coal hardness • seam gas • friability • pyrites ***or****depositional factors such as*: • seam thickness • multiple and rider seams • seam dip • depth of cover
Mining systems may include:	• longwall • main gate or single entry • board and total or partial pillar • pillar extraction methods
Analytical and interpretive tools may include:	• Ellicott diagrams • Cowards triangle • fire-gas ratios • gas makes • trending • fan laws • airway resistance • network analysis • computer simulation • gas laws • psychrometry • ventilation laws

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Surveys may include:	• pressure/quality/temperature survey and gas dust survey
Disruptions to ventilation circuits may result from changes in:	• barometric pressure • fall of ground • ventilation device changes/failure • outburst • holing into previous workings • re-circulation • ventilation circuit changes • natural ventilation pressure changes • failure (planned) unplanned • explosions • changes in ambient temperature/humidity • fires • equipment moves

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIVEH201B Operate light vehicle

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of a light vehicle in the resources and infrastructure industries. It includes planning and preparing for operations, operating a light vehicle, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify ***information***, ***work requirements and details*** 1.3. Access and apply ***safety information and procedures*** when planning ***light vehicle*** operations 1.4. Select appropriate types of equipment and/or ***ancillary attachments*** according to job specifications to maximise efficiency and effectiveness 1.5. Identify, address and report potential ***hazards and risks*** 1.6. Select appropriate personal protective equipment for planned work activities 1.7. Identify, address and report environmental issues
2. Operate a light vehicle	2.1. Carry out ***pre-start***, ***start-up***, ***park-up*** and ***shutdown*** procedures 2.2. Operate light vehicle with or without ancillary attachments 2.3. Operate equipment within recommended speed, engine capability and limitations 2.4. Use vehicle lights and ***indicators*** in accordance with traffic regulations 2.5. Identify and respond appropriately to hazardous and/or emergency driving situations 2.6. Complete light vehicle operations according to work plan
3. Carry out operator maintenance	3.1. Conduct ***visual inspections*** to identify faults 3.2. Conduct ***routine operational servicing*** and housekeeping activities 3.3. Carry out minor maintenance and repairs 3.4. Report defective or irregular performance to relevant authorities 3.5. Maintain and update vehicle records in accordance with workplace procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate a light vehicle:

- apply legislative, organisation and site requirements and procedures
- match ancillary equipment with appropriate tasks
- communicate effectively with others to coordinate light vehicle operations
- diagnose vehicle instrumentation readings and vehicle faults
- maintain vehicle records
- plan and organise work tasks
- resolve maintenance and repair issues
- interpret plans, reports, maps, schedules and specifications

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate a light vehicle:

- basic mine geological and survey data
- types of communication systems and equipment
- driving hazards and related defensive driving techniques
- equipment and trailer characteristics, technical capabilities and limitations
- fatigue management techniques
- light vehicle maintenance requirements/procedures
- loading/offloading procedures
- map reading and road navigation techniques
- relevant road rules, regulations, permit and licence requirements of the relevant state/territory road traffic authority

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating a light vehicle • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of a light vehicle • working with others to undertake and complete the operation of light vehicles that meets all of the required outcomes • consistent timely completion of the operation of light vehicles that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of light vehicles

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • relevant state/territory environmental protection legislation • relevant state/territory fatigue management regulations • relevant state/territory OHS legislation • relevant state/territory permit regulations and requirements • relevant state/territory road rules • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Information may include:	• geological and survey data • work plans • manufacturer's instructions
Work requirements and details may include:	• achievement targets • coordination requirements/issues • equipment defects • handover details • hazards and potential hazards • nature and scope of work • route • shift briefings • site lighting arrangements • vehicle identification • work orders • working conditions
Safety information and procedures may include:	• use of seat belts • security of door • conditions of brakes and braking system (air pressure)

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	• load characteristics • vehicle speed • fluid levels
Light vehicles may include:	• vehicles up to 4.5 tonne GVM • vehicles carrying up to 12 passengers • single or multiple drive
Ancillary attachments may include:	• vehicle loading cranes • tailgate loaders • sprayers
Hazards and risks may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • animals and objects on road • chemicals • contaminants • equipment • faulty brakes • faulty steering mechanism on vehicle • fences • fire in vehicle • flooded sections of road • foggy conditions • holes • leaking fuel • materials • oil on road • over-hanging rocks • parked vehicles on the road • pedestrians crossing the road • pot holes • unsafe ground • unstable faces • vehicles • wet and iced roads • windy sections of road • worksite hazards
Pre-start, **start-up and shutdown checks** may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • computer systems • display instrumentation and gauges

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	• engine and stop engine lights
	• fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel)
	• visual and audio warning devices and lights
	• vehicle handling procedures may include:
	  • accelerating and braking
	  • managing engine performance
	  • operating vehicle controls, instruments and indicators using air brakes
	  • positioning and stopping a vehicle
	  • reversing a vehicle
	  • starting a vehicle
	  • steering and manoeuvring a vehicle
	  • using defensive driving techniques

Shutdown procedures may include:	• safety mechanisms operational (horn, operating lights) • vehicle is left secured
Indicators may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • fuel filter • oil temperature • parking brake • retarder • service meter • speedometer/odometer • steering filters • tachometer • torque converter • transmission filter • voltmeter • water temperature
Visual inspection may include:	• cab condition (no rags in air conditioner vent, dirt around brake and accelerator pedals, seat condition, all gear secured) • cab mounts • damage to equipment • engine oil to be checked before starting engine • fire suppression unit (pins in position in triggers) • grease lines

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	• isolation and lock-out • light positioning and cleanliness • no combustible material around exhaust • oil leaks (engine, hydraulic hoses, ground) fuel leaks (engine, on ground), water leaks (radiator, hoses) • personal proximity • portable fire extinguisher (bracket, gauge, hose, ease of access) • radiator top up tank • tyres and rim condition • vehicle number • wheel nuts and studs • windows (clean, emergency exit tag in place)
Routine operational servicing may include:	• checking fluid levels • filter changing • greasing • keeping cab clean • tightening loose fittings • cleaning • degreasing • forced air • steam cleaning • vacuum

Unit Sector(s)

Vehicle Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIVEH202A Operate a medium vehicle

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of medium vehicles in the resources and infrastructure industries. It includes planning for operations, operating a medium vehicle and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to operating ***medium vehicles*** 1.2. Obtain, interpret and confirm ***work requirements*** from shift briefings, handover details or work orders before proceeding with operations 1.3. Assess and apply ***safety information and procedures*** throughout the operations 1.4. Identify, address and report potential ***hazards and risks*** 1.5. Prepare medium ***vehicle records*** and carry out log-on procedures 1.6. Conduct ***pre-start checks*** and ***start-up checks*** on medium vehicle and ancillary equipment
2. Operate medium vehicle	2.1. Steer, manoeuvre and position vehicle in accordance with traffic regulations and site manager's rules 2.2. Carry out movements within limits of vehicle and road dimensions 2.3. Operate ancillary attachments to the medium vehicle in accordance with ***manufacturer's instructions*** and site procedures 2.4. Ensure that all movements are smooth and controlled 2.5. ***Manage engine power*** to ensure efficiency of vehicle movement and to minimise damage to the engine and drive line 2.6. Avoid contact with obstacles 2.7. Ensure no injury to personnel or damage to property, equipment or facilities, and load
3. Carry out operator	3.1. Carry out equipment inspections and ***fault*** finding in accordance with manufacturer's instructions and site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks 3.3. Carry out minor maintenance to manufacturer's instructions and site

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	requirements 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site requirements 3.5. Process records in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate a medium vehicle:

- apply legislative, organisation and site requirements and procedures for operating a medium vehicle
- access, read and interpret technical information, including manufacturer's manuals
- operate medium rigid vehicles within specifications and limitations
- steer, manoeuvre and position vehicles
- identify and report faults in vehicles and ancillary equipment
- complete appropriate vehicle records and documentation
- use efficient driving techniques
- read instructions, procedures and signage relevant to driving a medium rigid vehicle
- map reading and road navigation techniques
- monitor and anticipate traffic hazards and take appropriate action

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate a medium vehicle:

- site requirements related to medium rigid vehicle operations
- OHS requirements related to medium rigid vehicle operations
- methods of securing loads
- site transport operations
- operations, characteristics and limitations of medium rigid vehicles and ancillary equipment
- site vehicle related records and documentation system
- relevant road rules, regulations, permit and licence requirements of the relevant state/territory road traffic authority
- medium rigid vehicle controls, instruments and indicators and their use
- procedures to be followed in the event of a driving emergency
- efficient driving techniques
- differences between transmission types
- principles of operation of air brakes and procedures for their use

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating a medium vehicle • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of medium vehicles • working with others to undertake and operate a medium vehicle in a way that meets all of the required outcomes • consistent timely operation of medium vehicles that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and operate medium vehicles

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • relevant State/Territory road rules • relevant State/Territory OHS legislation • relevant State/Territory fatigue management regulations • relevant State/Territory environmental protection legislation • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Medium vehicles may include:	• fuel and service vehicles • crane trucks (vehicle loading crane) • table tops • highway tippers • water tankers • fire engines • explosive carriers • any 2-axle rigid vehicle, including truck and bus greater than 8 tonnes GVM
Work requirements may include:	• achievement targets • coordination requirements/issues • equipment defects • handover details • hazards and potential hazards • identification/allocation • medium vehicle • nature and scope of work • route • shift briefings • site lighting arrangements • work orders

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	• working conditions

Safety information and procedures may include:	• use of seat belts
	• security of door
	• conditions of brakes and braking system (air pressure)
	• load characteristics
	• vehicle speed
	• fluid levels
	• safety requirements, including:
	  • use of authorised cargo restraining equipment
	  • observing authorised parking areas
	  • correct distances between vehicles
	  • observing site traffic rules
	  • passenger safety and control
	  • load security and safety
	  • transport rules
	  • operations signals procedures

Hazards and risks may include:	• wet and iced roads • oil on road • animals and objects on road • fire in vehicle • leaking fuel • faulty brakes • parked vehicles on the road • faulty steering mechanism on vehicle • pedestrians crossing the road • flooded sections of road • windy sections of road • foggy conditions
Vehicle records may include:	• manual or electronic data collection systems • log-on/off, activity recording • trip records • refueling information
Site requirements may include:	• observing site traffic rules • observing authorised parking areas • correct distances between vehicles
Pre-start checks may include:	• fluid levels, including fuel, engine oil, brake fluids, coolant, clutch/transmission fluid and windscreen washer fluid • windows and mirrors for clear visibility

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	• tyres and wheels (air pressure, tyre damage, illegal tread depth and condition, abnormal wear pattern and tyre compatibility) • fan belts • seat belts • door hatches and latches • battery and connections • visible and current registration and licences • spare wheel • wheel nuts • wheel chocks and wedges • rear guards • warning horn • power take off
Start-up checks may include:	• lights (headlights, clearance lights, indicators, hazard lights, reversing lights) • brakes • heating and ventilation • instruments and gauges • windscreen washers and wipers • pneumatic system including hydraulic hoses and hose connections
Manage engine power may include:	• selecting gear ratio to achieve smooth take-off • changing gears to maintain specified torque range at all speeds • utilising engine retarder

Faults may include:	• loose/leaking air brake and hose fitting
	• excessive wear in suspension system
	• overheating:
	  • coolant
	  • exhaust
	  • drive-line
	  • low oil temperature
	  • electrical discharge/overcharge
	  • low air pressure
	  • ancillary systems
	  • abnormal emissions

Manufacturer's instructions may include:	• engine crank • idling • engine RPM • operating temperatures

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	• torque range

Unit Sector(s)

Vehicle Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIVEH203B Operate light vehicle underground

Modification History

Not applicable.

Unit Descriptor

This unit covers the operating of light vehicles in the resources and infrastructure industry. It includes planning and preparing for operations; driving light vehicles; carrying out operator maintenance; and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the operation of ***light vehicles*** underground 1.2. Plan and prepare work according to site procedures and relevant compliance documentation 1.3. Receive, interpret and clarify shift change over details 1.4. Select appropriate type of equipment according to job specifications and to maximise efficiency and effectiveness of work activities 1.5. Identify, address and report ***potential risks and hazards*** 1.6. Select personal protective equipment appropriate for work activities 1.7. Inspect and assess site conditions to determine if scaling is required and take action according to site requirements 1.8. Conduct equipment ***pre-start checks*** to ensure equipment is ready for operation 1.9. Identify, address and report ***environmental issues*** 1.10. Communicate with other personnel using approved underground communication methods 1.11. Adhere to emergency procedures to ensure safety of personnel, plant and equipment
2. Drive light vehicle	2.1. Carry out ***start-up procedures*** 2.2. Operate equipment within recommended speed, engine capability, limitations and ***capacity of equipment*** 2.3. Monitor equipment performance utilising appropriate ***indicators*** to aid efficient operations 2.4. Manoeuvre equipment to maximise efficiency and ensure safety of other equipment and personnel 2.5. Assess road conditions and site conditions to determine appropriate driving techniques

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	2.6. Follow mine procedures for giving way to pedestrians and other vehicles 2.7. Complete work according to agreed work plan and outcomes 2.8. Carry out ***shut down/parking procedures***
3. Carry out operator maintenance	3.1. Conduct ***visual inspections and fault finding*** 3.2. Conduct ***routine operational servicing*** to ensure peak performance of equipment 3.3. Adhere to site underground breakdown procedures
4. Conduct housekeeping activities	4.1. ***Clean*** equipment 4.2. Clean and store attachments and other ancillary equipment 4.3. Complete all required records and documentation accurately and promptly

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to operate light vehicle underground:

- apply legislative, organisation and site requirements and procedures
- apply diagnostic techniques
- use driving techniques in dark and enclosed conditions
- operate, maintain and clean equipment
- maintain records
- read plans and documents
- report defects
- follow safe work practices
- select and use personal protective equipment
- trouble shoot
- use communications equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to operate light vehicle underground:

- emergency procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- geological and technical data
- hazardous goods procedures and consequences of spills
- isolation procedures
- mine operational system
- operational procedures and checks

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the operation of light vehicle underground • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of light vehicle underground • working with others to undertake the operation of light vehicle underground that meets all of the required outcomes • consistent timely operation of light vehicle underground that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake the operation of light vehicle underground

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Light vehicles are:	• defined as being of less than 4.5 tonne GVW
Light vehicles may include:	• 4WD • car/sedan • small truck • utility • other authorised vehicle
Potential risks and hazards may include:	• abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground • unstable faces • vehicles
Pre-start checks may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • computer systems

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	• display instrumentation and gauges (indicators, gauges, laser levels) • engine and stop engine lights (orange and red) • fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • visual and audio warning devices and lights
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality
Start-up procedures may include:	• correct location of equipment • safety mechanisms operational (horn, operating lights)
Capacity of equipment may include:	• duration of operation • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations
Indicators may include:	• brake air pressure • brake oil temperature • computer indicators • engine oil pressure • fuel filter • oil temperature • parking brake • retarder • service meter • speedometer/odometer • steering filters • tachometer • torque converter • transmission filter • voltmeter • water temperature
Shut down and parking	• vehicle is left in designated parking areas

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procedures may include:	• vehicle is left secured • vehicle engine is not left running
Visual inspection and fault finding may include:	• cab condition • cab mounts • damage to equipment • danger/out of service tags • engine oil • fire suppression unit • grease lines • light positioning and cleanliness • no combustible material around exhaust • oil leaks (engine, hydraulic hoses, ground) fuel leaks (engine, on ground), water leaks (radiator, hoses) • personal proximity • portable fire extinguisher • radiator top up tank • tyres and rim condition • vehicle number • wheel nuts and studs • windows (clean, emergency exit tag in place)
Routine operational servicing may include:	• checking fluid levels • filter changing • greasing • keeping cab clean • tightening loose fittings
Cleaning methods may include:	• degreasing • forced air • steam cleaning • vacuum • water

Unit Sector(s)

Vehicle Operations

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIVEH301A Conduct rail haulage operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of rail haulage operations in the resources and infrastructure industries. It includes planning and preparing for rail haulage operations, hauling material, loading and unloading rake of trucks, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for rail haulage operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements*** 1.3. Access, interpret and apply mine environmental ***data*** required to complete the allocated work 1.4. Carry out ***pre-start vehicle and equipment checks***
2. Haul material	2.1. Coordinate activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out pre-start, start-up, park-up, shutdown procedures 2.3. Use vehicle controls and systems to ensure smooth and effective operations 2.4. Operate ***rail vehicle*** within equipment limitations, and monitor and respond to gauges and systems 2.5. Safely load/unload personnel or materials 2.6. Safely carry out towing and pushing of equipment and plant in accordance with the manufacturer's specifications and/or site procedures and ***safety requirements*** 2.7. Recognise and respond to ***hazards*** and emergency situations 2.8. Perform work in accordance with the agreed plan and outcomes and within the operating capacities of the equipment
3. Load and unload rake of trucks	3.1. Accurately position rake underneath material loading chute/loading point 3.2. Load and unload rake using approved equipment minimising spillage and/or damage to equipment
4. Carry out operator maintenance	4.1. Carry out rail vehicle and rolling stock inspections and fault-finding 4.2. Carry out routine operational servicing, lubrication and housekeeping tasks using appropriate ***cleaning methods*** 4.3. Carry out minor ***operational maintenance***

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	4.4. Provide operator support during preparation for, and conduct of, major maintenance tasks 4.5. Process records

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct rail haulage operations:

- apply legislative, organisation and site requirements and procedures for the conduct of rail haulage operations
- access, interpret and apply technical and environmental information
- start, operate and shutdown haulage equipment
- apply diagnostic techniques to identify problems arising in rail haulage operations
- conduct relevant maintenance on locomotives and related equipment
- conduct emergency shutdowns
- maintain appropriate records
- apply environmental constraints and procedures
- dispose of environmentally sensitive oils, fluids and materials
- interpret ground conditions
- operate, maintain and clean rail haulage equipment
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct rail haulage operations:

- site and operational safety requirements
- rail vehicle equipment characteristics, technical capabilities and limitations
- rail vehicle operational procedures and checks
- location of equipment relative to working environment
- ventilation system and conditions
- rail vehicle maintenance requirements and procedures
- recording, reporting and handover procedures
- site environmental requirements and constraints related to rail vehicles
- bucket loading procedures
- environmental management procedures
- basic geological and technical data
- isolation procedures
- locomotive parking techniques

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- operational procedures and checks
- primary and secondary ventilation sources
- types of rail operations
- rail signalling system characteristics
- reporting procedures
- start up and shutdown procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of rail haulage operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conduct of rail haulage operations • working with others to undertake and complete rail haulage operations that meet all of the required outcomes • consistent timely completion of rail haulage operations that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete rail haulage operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • relevant Australian standards • site requirements • management plans • relevant OHS policy • relevant code of practice • manufacturer's instructions • safe working instructions • recognised standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Work requirements may include:	• shift briefings including:
	  • nature and scope of work
	  • working conditions
	  • achievement targets
	  • equipment defects
	  • hazards and potential hazards
	  • coordination requirements/issues
	  • handover details
	  • work orders

Data may include:	• ventilation/gas data • deputy reports
Pre-start vehicle and equipment checks may include:	• break indicators (x-rays) • chains • cleanliness of rail loading station • computer systems • danger tags • display instrumentation and gauges (e.g. indicators, gauges, laser levels) • door pins

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	• draw gear • idle positioned and running • light positioning and cleanliness • loading chute • locomotive and components • personal proximity • shackles • visual and audio warning devices and lights (e.g. tail light) • weigh machines • wheels
Rail vehicle may include:	• electric drive vehicles • mechanical drive vehicles • single or multiple drive vehicles • rolling stock
Safety requirements may include:	• personnel safety and control • load security and safety • transport rules • emergency braking • operational signals procedures
Hazards may include:	• collisions • communication failure • derailment • dirty tracks • faults (e.g. switches, unsecured trucks, run away trucks) • mud rushes • oversized material • spillage • visibility • water in pass
Cleaning methods may include:	• degreasing • forced air • steam cleaning • vacuum • water
Operator maintenance may include:	• charging system • greasing • remove and refitting of batteries • specific gravity meter • tightening loose fittings

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Unit Sector(s)

Vehicle Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIVEH302A Operate multi-combination vehicle

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of multi-combination vehicles in the resources and infrastructure industries. It includes preparing for operations, coupling and uncoupling trailers, conducting vehicle checks, supervising the loading and unloading of goods and materials, steering, manoeuvring and positioning a vehicle, managing engine power, monitoring and anticipating traffic and road conditions, monitoring vehicle efficiency, parking and securing the vehicle, and carrying out post-operational activities.
Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at a worksite within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm work requirements in the form of shift briefings, handover details or work orders before proceeding with operation 1.3. Prepare ***vehicle records*** and carry out log-on procedures to site requirements
2. Couple and uncouple trailers	2.1. ***Couple or uncouple*** and check prime mover and trailer
3. Conduct vehicle checks	3.1. Conduct ***pre-start checks*** on vehicle, trailers and ancillary equipment 3.2. Test vehicle and trailer operations and report faults which affect the safety of the operation 3.3. Start engine in accordance with manufacturer's guidelines and ***start-up procedures***, and check systems against operational criteria
4. Supervise loading and unloading of goods and materials	4.1. Identify and take into account ***load characteristics*** when determining appropriate loading and unloading procedures 4.2. Segregate dangerous or hazardous goods 4.3. Ensure that goods/materials are loaded in accordance with relevant mass and loading regulations and workplace procedures 4.4. Select and supervise the use of lifting aids and appliances used to aid loading 4.5. Conduct unloading activities in a safe and efficient manner taking into account suitable locations, stowage, safe use of equipment and the balance of remaining load 4.6. Identify goods requiring special handling and/or documentation and follow appropriate procedures
5. Steer, manoeuvre and position vehicle	5.1. Steer, manoeuvre and position vehicle in accordance with traffic regulations and site rules

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	5.2. Ensure vehicle movements are within limits of vehicle and road dimensions and in line with manufacturer's specifications 5.3. Confine centrifugal forces to load configuration and driving environment 5.4. Perform smooth and controlled movements 5.5. Avoid contact with obstacles 5.6. Carry out movements ensuring no injury to personnel or damage to property, equipment or facilities, and load 5.7. Utilise available road area to increase radius of turn and swept path
6. Manage engine power	6.1. Manage ***engine power*** to ensure efficiency of vehicle movement and to minimise damage to the engine and drive line 6.2. Operate vehicle within manufacturer's specified torque range and temperature 6.3. Coordinate engine power with gear selection to maintain torque range 6.4. Effect smooth transition in gear changes necessary to maintain engine power and torque range
7. Monitor and anticipate traffic and road conditions	7.1. Constantly monitor and anticipate traffic and road condition to allow a safe operation and ensure no injury to people or damage to property, equipment, loads and facilities 7.2. Achieve vehicle speed and safety using the accelerator, gears, brakes and speed retarding devices 7.3. Anticipate traffic flows to ensure the most efficient route of travel is taken to destinations without backtracking 7.4. Take account of ***road and traffic conditions***, road standards, distance and load
8. Monitor vehicle efficiency	8.1. Constantly monitor the vehicle's performance to ensure maximum efficiency of operation and fuel consumption 8.2. Take account of ***warning devices*** that indicate engine or vehicle performance is hindered 8.3. Constantly monitor vehicle for any ***engine malfunctions*** or factors which may affect vehicle performance

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	8.4. Report any ***faults*** or damage to vehicle to the appropriate authority
9. Park and secure the vehicle	9.1. Bring vehicle to a halt through the use of brakes using straight line braking techniques 9.2. Park and lock/secure vehicle in accordance with manufacturer's specifications, site procedures and legal requirements 9.3. Park vehicle in an area that is safe and legal in line with traffic regulations
10. Carry out post-operational activities	10.1. Carry out engine shutdown 10.2. Complete post-operational checks in accordance with approved procedures and faults 10.3. Maintain/update vehicle records and process

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate a multi-combination vehicle:

- apply legislative, organisation and site requirements and procedures for operating a multi-combination vehicle
- apply relevant occupational health and safety requirements
- operate within relevant statutory requirements
- access, read and interpret technical information, including manufacturer's manuals related to multi-combination vehicles/trailers, and their operations
- operate vehicles within specifications and limitations
- identify and report faults in vehicles and ancillary equipment
- change wheels
- complete appropriate vehicle records and documentation

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate a multi-combination vehicle:

- site requirements related to multi-combination vehicle operations
- occupational health and safety requirements related to multi-combination vehicle operations
- methods of securing loads
- procedures for loading and unloading goods/materials
- risks and precautions when loading and unloading goods/materials
- vehicle road codes and regulations
- site transport operations
- operations, characteristics and limitations of multi-combination vehicles, trailers and ancillary equipment
- operator level mechanical principles

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating a multi-combination vehicle • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of multi-combination vehicles • working with others to undertake and complete the operation of multi-combination vehicles that meets all of the required outcomes • consistent timely completion of the operation of multi-combination vehicles that safely, effectively and efficiently meet the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the operation of multi-combination vehicles

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements and procedures
	• manufacturer's guidelines and specifications
	• Australian standards
	• traffic regulations
	• company procedures
	• enterprise procedures
	• organisational procedures
	• safety information and procedures including:
	  • vehicle height
	  • condition of brakes and braking system (air pressure)
	  • load characteristics
	  • vehicle speed
	  • prime mover/trailer load weight ratio
	  • use of authorised cargo restraining equipment
	  • fluid levels
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Vehicle records may include:	• manual or electronic data collection systems • log-on/off, activity recording • trip records • refuelling information
Coupling or uncoupling procedures may include:	• selection of an appropriately firm and level parking area • applying parking brakes • ensuring turn-table jaw release is locked/unlocked • turn-table lock and trailer wheel chocks • compatibility of turn-table and trailer ring pin • alignment of prime-mover, turn-table and trailer skid-pad

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	• connecting brake service, emergency lines, auxiliary air and electrical lines • inspecting and testing of air brakes, trailer brakes, lock status of turn-table jaw release • securing and testing trailer landing legs
Pre-start checks may include:	• fluid levels, including fuel, engine oil, brake fluids, coolant, clutch/transmission fluid and windscreen washer fluid • windows and mirrors for clear visibility • tyres and wheels (air pressure, tyre damage, illegal tread depth and condition, abnormal wear pattern and tyre compatibility) • fan belts • seat belts • door hatches and latches • battery and connections • visible and current registration and licences • spare wheel • wheel nuts • wheel chocks and wedges • rear guards • warning horn • trailer king pin • ancillary drive belt(s) • turn-table • pneumatic system including draining as required • skid plate block
Start-up procedures may include:	• lights (headlights, clearance lights, indicators, hazard lights, reversing lights) • brakes • heating and ventilation • instruments and gauges • windscreen washers and wipers • pneumatic system including hydraulic hoses and hose connections
Load characteristics may include:	• bulk materials • plant and equipment • irregularly shaped • packaged or unpackaged • labelled or unlabelled • palleted or unpalleted

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Engine power may include:	• selecting gear ratio to achieve smooth take-off • changing gears to maintain specified torque range at all speeds • utilising engine retarder
Road and traffic conditions may include:	• effects of weather conditions on road • road surface • road gradient • degree of visibility • speed limits • approved routes • legal parking areas • parking distances • traffic pattern and density
Warning devices may include:	• audible reversing buzzer • warning lights • speedometer • tachometer • oil pressure • air pressure • temperature gauges/warning lights • brake warning light • fuel quantity • electrical charging • ancillary systems indicators, e.g. high beam, turn signals, parking brake

Engine malfunctions may include:	• overheating:
	  • coolant
	  • exhaust
	• drive-line
	• low oil temperature
	• electrical discharge/overcharge
	• low air pressure
	• ancillary systems
	• abnormal emissions

Faults that may affect the safety and efficiency of the operation may include:	• excessive wear on king pins • loose/leaking air brake and hose fitting • excessive wear in suspension system

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Unit Sector(s)

Vehicle Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIVEH303A Drive heavy combination vehicle

Modification History

Not applicable.

Unit Descriptor

This unit covers driving a heavy combination vehicle in the resources and infrastructure industries. It includes planning and preparing for operations, operating a heavy combination vehicle, coupling and uncoupling trailers, and carrying out operator maintenance. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, interpret and clarify/confirm ***work requirements and details*** in the form of shift briefings, handover details or work orders before proceeding 1.3. Access, interpret and apply geological and survey data required to complete the allocated work in accordance with site procedures 1.4. Access and apply ***safety information and procedures*** throughout the work
2. Operate articulated vehicle	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out ***pre-start***, ***start-up***, park-up and shutdown procedures 2.3. Operate ancillary attachments to the articulated vehicle 2.4. Operate articulated vehicle with or without ancillary attachments in accordance with ***manufacturer's specifications*** and site procedures 2.5. Manage ***engine power*** to ensure efficiency of vehicle movement and to minimise damage to the engine and drive line 2.6. Recognise and respond to hazardous and emergency situations 2.7. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the articulated vehicle
3. Couple and uncouple trailers	3.1. Carry out ***coupling or uncoupling*** and check prime mover and trailer
4. Carry out operator maintenance	4.1. Carry out equipment inspections and fault finding 4.2. Carry out routine operational servicing, lubrication and housekeeping tasks 4.3. Carry out minor maintenance 4.4. Provide operator support during preparation for, and conduct of, major

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	maintenance tasks 4.5. Process ***records*** in accordance with site requirements

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.
Required skills
Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to drive a heavy combination vehicle: • apply legislative, organisation and site requirements and procedures for driving a heavy combination vehicle • apply operational safety requirements • access, interpret and apply technical information • maintain equipment records • use relevant hand tools • apply diagnostic techniques • communicate effectively • apply environmental constraints related to specified operations
Required knowledge
Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to drive a heavy combination vehicle: • site and equipment safety requirements • articulated vehicle operational procedures • basic site geological and survey data • site operational procedures • equipment and trailer characteristics, technical capabilities and limitations • articulated vehicle maintenance requirements/procedures • vehicle record systems • communication systems • site environmental requirements and constraints related to the articulated vehicle

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions to drive a heavy combination vehicle • implementation of requirements, procedures and techniques for the safe, effective and efficient driving of a heavy combination vehicle • working with others to undertake and drive a heavy combination vehicle that meets all of the required outcomes • consistent, timely driving of a heavy combination vehicle that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and drive heavy combination vehicles

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work requirements and details may include:	• articulated vehicle identification/allocation • nature and scope of work • route • working conditions • achievement targets • site lighting arrangements • equipment defects • hazards and potential hazards • coordination requirements/issues • shift briefings • handover details • work orders

Safety information and procedures may include:	• use of seat belts
	• security of door
	• conditions of brakes and braking system (air pressure)
	• load characteristics
	• vehicle speed
	• fluid levels
	• safety requirements, including:
	  • use of authorised cargo restraining equipment
	  • observing authorised parking areas
	  • correct distances between vehicles
	  • observing site traffic rules
	  • passenger safety and control

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	• load security and safety • transport rules • operations, signals, procedures
Pre-start procedures may include:	• fluid levels, including fuel, engine oil, brake fluid, coolant, clutch / transmission fluid and windscreen, washer fluid • windows and mirrors for clear visibility • tyres and wheels (air pressure, tyre damage, illegal tread depth and condition, abnormal wear pattern and tyre compatibility) • fan belts • seat belts • door hatches and latches • battery and connections • visible and current registration and licences • spare wheel • wheel nuts • rear guards • warning horn
Start-up procedures may include:	• articulates (head heavy mediums, clearances, indicators, hazards, reversing • brakes • heating and ventilation • instruments and gauges • windscreen washers and wipers
Manufacturer's specifications may include:	• engine crank/start • idling • engine rpm • operating temperatures • torque range
Engine power may include:	• selecting gear ratio to achieve smooth take-off • changing gears to maintain specified torque range at all speeds • utilising engine retarder
Trailer **coupling**, **uncoupling** procedures may include:	• selection of an appropriately firm and level parking area • applying parking brakes • ensuring turn-table jaw release is locked/unlocked • turn-table lock and trailer wheel chocks • compatibility of turn-table and trailer ring pin • alignment of prime-mover, turn-table and

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	trailer skid-pad • connecting brake service, emergency lines, auxiliary air and electrical lines • inspecting and testing air brakes, trailer brakes, lock status of turn-table jaw release • securing and testing trailer landing legs
Records may include:	• log-on/off • activity recording • trip records • refuelling information

Unit Sector(s)

Vehicle Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIVEH304B Conduct tip truck operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of tip truck operations in the resources and infrastructure industries. It includes planning and preparing, conducting pre-operational checks, operating a tip truck, loading, transporting and tipping materials, carrying out driver maintenance, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation and procedures*** relevant to the work activity 1.2. Work instructions, including plans, specifications, ***quality requirements*** and operational details are obtained, confirmed and applied to the allocated task 1.3. Signage requirements are identified and obtained from the project traffic management plan and implemented 1.4. Vehicle, ***tools and equipment*** selected to carry out ***tip truck tasks*** are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported 1.5. Environmental protection requirements are identified from the project environmental management plan, confirmed and applied to the allocated task
2. Conduct machine pre-operational checks	2.1. Pre-start, start-up, park and shutdown procedures are carried out 2.2. Tip truck controls and functions, including tray, steering, brakes and manoeuvrability are checked for serviceability and any faults are rectified or reported
3. Operate truck	3.1. Site hazards associated with tip truck operations are identified and safe operating techniques are used to minimise risk 3.2. Engine power is managed to ensure efficiency of truck movements and to minimise damage to the engine and gears 3.3. Engine power is coordinated with gear selection ensuring smooth transition and operation within torque range 3.4. ***Tip truck*** is operated to work instructions 3.5. Road/traffic conditions are constantly monitored taking into account of road standards, traffic flow, distance and load, ensuring no injury to people or damage to property, equipment, loads and facilities 3.6. Vehicle is brought to a halt smoothly,

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	minimising the wear and tear on vehicle using the engine retarder, gears and brakes
4. Load, transport and tip materials	4.1. Vehicle is positioned at load and discharge points with a minimum of manoeuvre 4.2. Tip truck movements including the raising and lowering of the tray are smooth and controlled 4.3. Weight and distribution of load is assessed for type of ***material*** and size of vehicle to ensure it is within vehicle capacity 4.4. Safety and security of load, including load cover requirements, are maintained from loading site to discharge site 4.5. Load is discharged on slope and/or over face at fill site 4.6. Material is dumped/spread evenly to work instructions 4.7. Tray is cleared, lowered and secured before resuming travel
5. Carry out operator maintenance	5.1. Tip truck is safely parked, prepared for ***operator maintenance*** and shutdown 5.2. Inspection and fault finding are conducted 5.3. Defective parts are removed and replaced safely and effectively 5.4. Regular programmed maintenance tasks are carried out
6. Clean up	6.1. Work area is cleared and materials disposed of or recycled 6.2. Vehicle, tools and equipment are cleaned, checked, maintained and stored

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct tip truck operations:

- apply legislative, organisation and site requirements and procedures for conducting tip truck operations

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct tip truck operations:

- tip truck types, characteristics, technical capabilities and limitations
- basic principles of soil technology for civil works
- site and equipment safety requirements
- tip truck operational techniques related to essential tasks
- processes for interpreting drawings and sketches
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheet and materials handling methods
- safe operating techniques in all terrain
- basic earthworks calculations
- civil construction activity sequences of road construction, earthworks and drainage
- load quantity calculations
- JSA's/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting tip truck operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conduct of tip truck operations • working with others to undertake and complete the conduct of tip truck operations that meets all of the required outcomes • consistent timely completion of tip truck operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete tip truck operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Compliance documentation and procedures may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • OHS requirements including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including (but not limited to) recognising and preventing hazards associated with fill-site traffic movement, overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including (but not limited to) ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • hazards and risks including (but not limited to) uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to this unit including (but not limited to) emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation • environmental requirements including (but not limited to) organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Quality requirements may include:	• dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Tools and equipment includes:	• the hand tools and maintenance equipment associated with the particular tip truck

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Tip truck tasks should include:	• the transporting and tipping of soils, sand, rocks and construction gravels on public roads and worksites • static tipping and mobile tipping and spreading, discharging/tipping on slopes and discharging/tipping over edges • discharging into bins and hoppers and spreading aggregate
Tip trucks may include:	• self-propelled vehicle designed for on road use to transport a variety of construction materials to and from construction sites • vehicles that are rigid (with or without a dog trailer) or articulated • various configurations of tip trucks, the number of vehicle axles, the weight of each vehicle and load capacities are dependent on the vehicle class • loads that are normally discharged by tipping from the rear of the vehicle or trailer but, methods of material discharge may also include side and belly dumping • National Licence Classes for trucks • MR (Medium rigid) – a vehicle (2 axle only) which is greater than 8t GVM, plus a trailer of not more than 9t GVM • HR (Heavy Rigid) – a vehicle (no axle limit) which is greater than 8t GVM, plus a trailer of not more than 9t GVM • HC (Heavy combination) – a heavy rigid vehicle with a trailer greater than 9t GVM or a prime mover and semi trailer • MC (Multi combination) - multi-combination vehicles like Road Trains and B-Double Vehicles. Also includes vehicles in class 'HC'.
Materials may include:	• materials may include but are not limited to clays, silts, stone, gravel, mud, rock, sand, topsoil, bituminous mixes, timber, blended materials, organic materials, typical construction site materials/waste and aggregates • rock types may include metamorphic, igneous and sedimentary
Operator maintenance may include:	• cleaning, authorised servicing and the monitoring, recording and reporting of faults • the conduct of authorised minor replacements • the provision of assistance to maintenance personnel during maintenance and repair activities

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Unit Sector(s)

Vehicle Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIVEH305A Operate and maintain a four wheel drive vehicle

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation and maintenance of four-wheel drive vehicles in the resources and infrastructure industries. It includes identifying four-wheel drive specific terms, terminology and techniques, planning for minimal environmental impact, performing pre-departure checks, using the features of a four-wheel drive vehicle to drive in a variety of terrain types, and performing maintenance and minor repairs on four-wheel drive vehicles. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify four-wheel drive specific terms, terminology and techniques	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify the structural and handling differences between a conventional two wheel drive and a four-wheel drive vehicle 1.3. Identify and demonstrate the purpose and use of front wheel hubs 1.4. Identify factors affecting tyre size, fitment, rating, and pressure 1.5. Correctly identify, recovery hooks and mounting features 1.6. Identify hazards associated with incorrect use of vehicle features or equipment
2. Plan for minimal environmental impact	2.1. Determine ***types of impact*** likely to occur during four-wheel driving and associated activities 2.2. Demonstrate compliance with land management principles and policies when planning exploration activities 2.3. Comply with policies and management plans relevant to the activity area 2.4. Plan and conduct activities in a manner which minimises environmental impact 2.5. Adopt and implement procedures to ensure minimisation of harm to the environment from four-wheel drive activities 2.6. Demonstrate cooperation and consideration towards other land users
3. Perform pre-departure checks	3.1. Perform routine pre-departure checks under the bonnet, under the body, and on external and internal items and accessories 3.2. Take action to correct any deficiency 3.3. Determine food and water requirements for journey 3.4. Select suitable navigation equipment where necessary 3.5. Interpret weather conditions to determine suitability for driving 3.6. Apply safe vehicle loading practices 3.7. Secure items of personal luggage safely

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	3.8. Advise passengers of any special safety precautions to be taken when traversing rough terrain
4. Use the features of a four-wheel drive vehicle to drive in a variety of terrain types	4.1. Operate four-wheel drive vehicles correctly and safely both on and off road, in accordance with road rules, principles of four-wheel driving and OHS regulations 4.2. Apply smooth accelerator control strategies over a range of terrain types 4.3. Demonstrate recommended braking techniques for hard top surfaces and off road conditions 4.4. Correctly identify situations where the engagement of four-wheel drive is required 4.5. Engage correctly, where fitted, front hubs or centre differential lock (constant four-wheel drive vehicles) 4.6. Survey track to identify hazards, asses risk and select a best route 4.7. Select routes to minimise damage to the environment 4.8. Use appropriate range, gear, speed, driving and braking technique to negotiate a ***range of terrain types*** and whilst maintaining control of vehicle at all times, being aware of ***contextual issues*** 4.9. Perform a stop stall key start recovery procedure on a moderate incline 4.10. Check brakes and undercarriage after negotiating varying terrain 4.11. Perform repairs to damaged tracks if necessary 4.12. Use standardised operating procedures when travelling in company with other vehicles 4.13. Maintain appropriate hand positioning on steering wheel
5. Use a single snatch strap to recover a vehicle	5.1. Identify risks associated with vehicle recovery and develop and implement strategies to minimise risks 5.2. Identify recovery hooks 5.3. Confirm use of recommended mounting strategy on the four-wheel drive vehicle and use of rated recovery equipment when

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	practicable 5.4. Demonstrate procedures for preparing vehicles for recovery 5.5. Demonstrate techniques to minimise impact on the environment during vehicle recovery 5.6. Demonstrate techniques for joining two snatch straps 5.7. Coordinate safe recovery of a four-wheel drive vehicle using a single snatch strap 5.8. Correctly perform post recovery checks and repairs
6. Perform maintenance and minor repairs on four-wheel drive vehicles	6.1. Select/access maintenance equipment correctly, including spares and fluids, prior to departure after consideration of contextual issues 6.2. Check vehicles regularly prior to and during trip and correctly perform ***routine maintenance***/repair tasks 6.3. Make vehicle performance reports to the designated person 6.4. Demonstrate safe use of a jack to support a four-wheel drive vehicle on uneven ground

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate and maintain a four-wheel drive vehicle:

- apply legislative, organisation and site requirements and procedures for operating and maintaining a four-wheel drive vehicle
- apply four-wheel driving techniques in different terrain
- reduce environmental impact
- research and evaluation of impact through observation and questioning
- solve problems and apply solution focused strategies
- apply communication and recording skills
- perform basic manual and mechanical maintenance skills
- acquire required licences and permits
- apply diagnostic and troubleshooting procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate and maintain a four-wheel drive vehicle:

- features driving techniques and handling characteristics of four-wheel drives in different terrain
- terms used to describe four-wheel drive capabilities including:
  - approach departure angles
  - ramp over angle
  - ground clearance
  - suspension travel
- differences between optional four-wheel drive and constant four-wheel drive vehicles and their impacts on vehicle operation and capability
- tyre management principles
- environmental impact of four-wheel driving
- OHS legislation relevant to the use of four-wheel drive vehicles
- use of single snatch straps to recover vehicles and hazards associated with vehicle recovery
- techniques for travelling in convoy
- minimum impact codes
- legal and statutory requirements (of land management agencies)

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- specific problems of fragile environments or threatened species
- area restrictions
- natural processes and interrelationships occurring within natural environments and the manner in which interrelationships between natural processes can be affected
- cultural protocols for making contact and communicating with indigenous people and organisations
- practices which may be implemented to minimise impact (e.g. avoidance of sensitive areas, appropriate site and route selection, limited party size, keeping to marked tracks or routes, campfire management and rehabilitation)
- practices and procedures used by land management authorities to reduce impact including:
  - restricting access/limiting group size
  - seasonal restrictions
  - use of permits
  - enforcing code of ethics and conduct

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating and maintenance of a four-wheel drive vehicle • implementation of requirements, procedures and techniques for the safe, effective and efficient operation and maintenance of a four-wheel drive vehicle • working with others to undertake and complete the operating and maintenance of a four-wheel drive vehicle that meets all of the required outcomes • consistent timely maintenance and operation of a four-wheel drive vehicle that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the maintenance of a four-wheel drive vehicle

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Types of impact may include:	• pollution with foreign matter (human waste, rubbish, soap, detergent) • vegetation tramping and breakage • breakage and dislodgment of rock and other formations • compaction of soil and other deposits • disturbance of fauna • introduction of new flora and fauna • chemical alteration of environments • damage to, or inappropriate behaviour in, cultural sites • graffiti • reduction in decomposing timber • campfire scars • noise • intrusion into private lives and culture • development of facilities and signs
Range of terrain types may include:	• moderate inclines (up and down) • sloping terrain • very soft ground • rocky areas • sand • axle deep water crossings • mud/black soil/snow/ice
Contextual issues may include:	• duration of trip • type of terrain to be covered • remoteness of area to be visited

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Routine maintenance may include:	• changing wheels in uneven terrain • fluid top-up

Unit Sector(s)

Vehicle Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIVEH306A Operate mine service vehicle

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of mine services vehicles in the resources and infrastructure industries. It includes planning and preparing for mine services vehicle operations, conducting mines service vehicle activities, carrying out operator maintenance, conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for mine services vehicle operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Select appropriate type and ***capacity of equipment and/or attachments*** according to job specifications 1.4. Identify, address and report ***potential risks and hazards*** 1.5. Select personal protective equipment appropriate for work activities 1.6. Conduct ***equipment pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report ***environmental issues*** 1.8. Communicate with other personnel using approved communication methods 1.9. Adhere to emergency procedures to ensure safety of personnel, plant and equipment
2. Conduct mine service vehicle activities	2.1. Carry out ***start-up, park and shutdown procedures*** 2.2. Operate equipment within recommended speed, engine capability and limitations 2.3. Monitor equipment performance utilising appropriate ***indicators*** to aid efficient operations 2.4. Manoeuvre equipment to maximise efficiency and ensure safety of other equipment and personnel 2.5. Complete work according to agreed work plan and outcomes
3. Carry out operator maintenance	3.1. Conduct ***visual inspection and fault finding*** 3.2. Conduct ***routine operational servicing*** to ensure peak performance of equipment
4. Conduct housekeeping activities	4.1. Clean equipment 4.2. Clean and store attachments and other ancillary equipment 4.3. Complete all required records and

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	documentation accurately and promptly

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to operate a mine services vehicle:

- apply legislative, organisation and site requirements and procedures for operating a mine service vehicle
- apply diagnostic techniques
- evaluate ground conditions
- interpret plans, reports, maps, specifications
- maintain records
- follow safe work practices
- select and use protective equipment
- use communication equipment
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to operate a mine services vehicle:

- emergency procedures
- equipment processes, technical capability and limitations
- hauling procedures and operating conditions in the work environment
- hazardous goods procedures
- isolation procedures
- operational procedures and checks
- personnel transport procedures
- site safety requirements
- towing procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for operating a mine service vehicle • implementation of requirements, procedures and techniques for the safe, effective and efficient operation of a mine service vehicle • working with others to undertake and operate a mine service vehicle that meets all of the required outcomes • consistent timely operation of a mine service vehicle that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery

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	environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and operate a mine services vehicle

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance documentation may include:	• legislative, organisation and site requirements and procedures, including (but not limited to):
	  • mining safety and health
	  • mine inspection
	  • OHS
	  • explosives
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and workplace relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Mine service vehicles may include:	• backhoe • skid steer • tractor

Potential risks and hazards may include:	• abandoned equipment
	• adjoining pit walls
	• adverse weather conditions (electrical storms, floods, fires)
	• chemicals
	• equipment
	• fences
	• holes
	• materials
	• over-hanging rocks
	• personnel
	• pot holes
	• unsafe ground
	• unstable faces
	• vehicles
	• contaminants including:
	  • animal carcasses (sheep, cows, kangaroos)
	  • cigarette butts
	  • consumables

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	• ear plugs • metal bucket teeth • metal or steel rods • old fencing • old piping • plastic • timber
Capacity of equipment and/or attachments may include:	• duration of operation • efficient and safe operating speed • operating limitations • type of activities performed • weight and/or load limitations
Equipment pre-start checks may include:	• air filter restriction indicator • cab (horn, lights, air conditioner) • computer systems • display instrumentation and gauges (indicators, gauges, laser levels) • engine and stop engine lights (orange and red) • fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • visual and audio warning devices and lights
Environmental issues may include:	• culturally-sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality
Start-up, **park and shutdown procedures** may include:	• correct location of equipment • safety mechanisms operational (horn, operating lights) • vehicle is left secured
Indicators may include:	• brake oil temperature • engine oil pressure • brake air pressure • water temperature • service meter

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	• voltmeter • torque converter oil temperature • tachometer • speedometer/odometer • parking brake • steering filters • transmission filter • fuel filter • retarder • computer indicators
Visual inspection and fault may include:	• cab condition (no rags in air conditioner vent, dirt around brake and accelerator pedals, seat condition, all gear secured) • cab mounts • damage to equipment • danger tags • engine oil to be checked before starting engine • fire suppression unit (pins in position in triggers) • grease lines • light positioning and cleanliness • no combustible material around exhaust • oil leaks (engine, hydraulic hoses, ground) fuel leaks (engine, on ground), water • leaks (radiator, hoses) • personal proximity • portable fire extinguisher (bracket, gauge, hose, ease of access) • radiator top up tank • tyres and rim condition • vehicle number • wheel nuts and studs • windows (clean, emergency exit tag in place)

Routine operational servicing may include:	• checking fluid levels
	• filter changing
	• greasing
	• keeping cab clean
	• tightening loose fittings
	• cleaning including:
	  • degreasing
	  • forced air
	  • steam cleaning

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	• vacuum • water

Unit Sector(s)

Vehicle Operations

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIVEH307A Operate heavy rigid vehicle

Modification History

Not applicable.

Unit Descriptor

This unit covers the operation of heavy rigid vehicles (with more than 2 axles) including the starting, driving and stopping; and the conduct of operator checks and actions.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Obtain, interpret and clarify/confirm ***work requirements and details*** in the form of shift briefings, handover details or work orders before proceeding 1.2. Access, interpret and apply geological and survey data required to complete the allocated work in accordance with site procedures 1.3. Access and apply ***safety information and procedures*** throughout the work
2. Operate heavy rigid vehicle	2.1. Resolve coordination activities with others at the site prior to commencement of, and during, the work activity 2.2. Carry out ***pre-start***, ***start-up***, park-up and shutdown procedures in accordance with manufacturer and/or site procedures 2.3. Operate ancillary attachments to the heavy rigid vehicle in accordance with manufacturer instructions and site procedures 2.4. Operate heavy rigid vehicle with or without ancillary attachments in accordance with ***manufacturer specifications*** and site procedures 2.5. ***Manage engine power*** to ensure efficiency of vehicle movement and to minimise damage to the engine and drive line 2.6. Recognise and respond to hazardous and emergency situations in accordance with manufacturer instructions and site procedures 2.7. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the heavy rigid vehicle
3. Carry out operator maintenance	3.1. Carry out equipment inspections and fault finding in accordance with manufacturer instructions and site requirements 3.2. Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer instructions

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	and site authorised procedures and practices 3.3. Carry out minor maintenance to manufacturer instructions and site requirements 3.4. Provide operator support during preparation for, and conduct of, major maintenance tasks in accordance with site requirements 3.5. Process ***records*** in accordance with site requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to operate heavy rigid vehicles:

- apply operational safety requirements
- access, interpret and apply technical information
- match appropriate equipment with tasks
- maintain equipment records
- use relevant hand tools
- apply diagnostic techniques
- communicate effectively
- apply environmental constraints relate to specified operations
- dispose of environmentally sensitive fluids and materials

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to operate heavy rigid vehicles:

- site and equipment safety requirements
- heavy rigid vehicle operational procedures
- basic mine geological and survey data
- mine operational procedures
- equipment characteristics, technical capabilities and limitations
- heavy rigid vehicle maintenance requirements/procedures
- vehicle record systems
- communication systems
- mine environmental conditions

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of procedures, requirements and instructions to operate a heavy rigid vehicle appropriate to a mine site
	• implementation of appropriate procedures and techniques for the efficient and effective operation of a heavy rigid vehicle appropriate to a worksite, while complying with site risk control, health, safety, environmental, quality and communication requirements. This will include:
	  • applying personal and operational safety procedures
	  • interpreting and communicating operational information on heavy rigid vehicle operations and mine site traffic rules
	  • completing pre-start, start-up, park-up and shutdown procedures
	  • operating the heavy rigid vehicle for its specified purpose
	  • operating the heavy rigid vehicle within manufacturer instructions/constraints
	  • applying environmental requirements
	  • carrying out operator maintenance

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity • Aboriginal people and other people from a non English speaking background may have second language issues • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances • Where applicable, physical resources should include equipment modified for people with disabilities • Access must be provided to appropriate learning and/or assessment support when required

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	working with others to operate heavy rigid vehicles

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Work requirements and details may include:	• heavy rigid vehicle identification/allocation • nature and scope of work • route • working conditions • achievement targets • site lighting arrangements • equipment defects • hazards and potential hazards • coordination requirements/issues • shift briefings • handover details • work orders

Safety information and procedures may include:	• use of seat belts
	• security of door
	• conditions of brakes and braking system (air pressure)
	• load characteristics
	• vehicle speed
	• fluid levels
	• safety requirements, including:
	  • use of authorised cargo restraining equipment
	  • observing authorised parking areas
	  • correct distances between vehicles
	  • observing mine traffic rules
	  • passenger safety and control
	  • load security and safety
	  • transport rules
	  • operations signals procedures

Pre-start procedures may include:	• fluid levels, including fuel, engine oil, brake fluid, coolant, clutch/transmission fluid and windscreen washer fluid • windows and mirrors for clear visibility • tyres and wheels (air pressure, tyre damage,

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	illegal tread depth and condition, abnormal wear pattern and tyre compatibility) • fan belts • seat belts • door hatches and latches • battery and connections • visible and current registration and licences • spare wheel • wheel nuts • rear guards • warning horn
Start-up procedures may include:	• heavy rigids (head heavy mediums, clearance heavy rigids, indicators, hazard heavy rigids, reversing heavy rigids) • brakes • heating and ventilation • instruments and gauges • windscreen washers and wipers
Manufacturer specifications may include:	• engine crank/start • idling • engine rpm • operating temperatures • torque range
Engine power may be managed by:	• selecting gear ratio to achieve smooth take-off • changing gears to maintain specified torque range at all speeds • utilising engine retarder
Operator maintenance procedures are those:	• established and authorised for the site
Records may include manual or electronic data collection systems and cover:	• log-on/off • activity recording • trip records • refuelling information

Unit Sector(s)

Vehicle Operations

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWBP201A Treat and dispose of rejects and tailings

Modification History

Not applicable.

Unit Descriptor

This unit covers the treatment and disposal of rejects and tailings in the mining and extractive industries. It includes: planning and preparing for operations; and carrying out treatment, disposal and post-operational procedures.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the treatment and disposal of rejects and tailings 1.2. Access, interpret and clarify ***mineralogical data*** required to complete the allocated work 1.3. Obtain, interpret and clarify ***work requirements*** for the satisfactory completion of operations 1.4. ***Inspect and prepare work area in coordination with others*** 1.5. Identify and acquire ***materials***, ***equipment*** and personnel required for the allocated work
2. Carry out treatment and disposal	2.1. Resolve coordination requirements with others at the site prior to commencing and during work activities 2.2. Carry out ***pre-start***, ***start-up and shutdown procedures*** 2.3. Monitor and adjust the displacement or addition of water to maintain the disposal of rejects 2.4. Monitor and adjust the displacement or addition of additives to materials to maintain the treatment and disposal of tailings 2.5. Monitor and adjust the addition of settling and clarity agents to maintain density prior to disposal of tailing 2.6. Carried out the disposal of rejects and tailing 2.7. Act on or report monitoring systems and alarms 2.8. Recognise and respond to ***hazardous and emergency situations***
3. Carry out post-operational procedures	3.1. Inspect, fault find and report faults 3.2. Carry out ***operator maintenance***, ***servicing and housekeeping tasks*** 3.3. Maintain process and pass on records and reports

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to treat and dispose of rejects and tailings:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- applying the plant operating procedures
- apply operating and equipment records maintenance requirements
- apply diagnostic techniques
- use hand tools
- apply procedures for the disposal of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- work wearing personal protective equipment

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to treat and dispose of rejects and tailings:

- site hazard identification and response procedures
- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements
- site communication procedures
- site product characteristics
- site geological and survey data
- site and equipment operational procedures
- plant pre-start, start-up, operating and shutdown procedures and techniques
- plant components functions, characteristics, technical capability and limitations
- plant breakdown procedures
- plant isolation procedures
- site record keeping requirements
- site confine space work procedures
- site personal protective equipment requirements
- contaminant identification

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the treatment and disposal of rejects and tailings • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the treatment and disposal of rejects and tailings • working with others to undertake and complete the treatment and disposal of rejects and tailings that meet all of the required outcomes • consistent timely completion of the treatment and disposal of rejects and tailings that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the treatment and disposal of rejects and tailings

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mineralogical data may include relevant site-specific information in relation to:	• settling characteristics • reactivity with additives, settling and clarifying agents
Work requirements may come from briefings, **handovers**, **and work orders** and may include:	• nature and scope of tasks • achievement targets • operational conditions • site layout and out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Inspect and prepare work area may include:	• identification of hazards
	• selection and implementation of control measures for the hazards identified
	• safeguarding site and non-site personnel by:
	  • erection of barricades and posting of signs
	  • selection of appropriate equipment to ensure personnel safety and protection

Coordination with others may include with:	• yard persons • laboratory personnel • mobile plant operators • maintenance personnel
Materials may include:	• flocculants • gypsum

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Equipment may include:	• thickeners • centrifuges • band press filters • spirals • screens • pumps • blowers • agitators • flow and density meters • conveyors • radiation gauges • pipeline • sumps • bucket elevators • reject bins • mobile plant
Pre-start and start-up procedures may include:	• walk around check of the plant • checking and toping up fluid and chemical levels • lubrication • inspection of attachments to ensure security and no defects • instrument and control lever checks • reporting defects and damage • follow prescribed start-up sequence • confirm plant is operational
Shutdown procedures may include:	• following prescribed shutdown sequence • securing equipment
Hazardous and emergency situations may include:	• confined spaces • working alone • spillages • unplanned shutdown • fire • electrical • dust • noise
Operator service, **maintenance and housekeeping** tasks are those established and authorised for the site and may include:	• scheduled servicing • recharging additive, settling and clarifying storage units • greasing • equipment adjustments

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	• cleaning

Unit Sector(s)

Waste and By-products

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWBP202A Distribute tailings

Modification History

Not applicable.

Unit Descriptor

This unit covers distribution of tailings in coal and metalliferous mining and extractive industries. It includes: planning and preparing; starting up equipment; monitoring and dispersing tailings; conducting housekeeping activities; and shutting down and/or isolating equipment.

Application of the Unit

This unit applies in all contexts to the distribution of tailings as part of the processing cycle. This unit is appropriate for those working in operational roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to distribution of tailings 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of ***auxiliary equipment*** for work activities 1.6. Perform equipment ***pre-start checks*** 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures 1.10. Use approved dust suppression and extraction methods 1.11. Prepare site for positioning of equipment 1.12. Position and stabilise equipment according to work plan
2. Start-up equipment in sequence	2.1. Carry out ***start-up*** procedures and complete start-up checks according to ***plant*** configurations and system requirements 2.2. Confirm plant is operational
3. Monitor and disperse tailings	3.1. Read and interpret data from equipment ***indicators*** to determine deposition parameters 3.2. Continuously inspect plant and identify defects and potential problems 3.3. Adjust equipment to approved operating parameters to ***optimise*** performance, maintain efficiency and to meet tailings quality targets 3.4. Control feed to equipment 3.5. ***Monitor*** bunded areas and manage ***overflows***

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	3.6. Complete all required documentation 3.7. Identify, address and report hazards 3.8. Report spillages to meet environmental guidelines 3.9. Pass on end of shift information to oncoming shift 3.10. Ensure tailings meet fill plant operating parameters
4. Conduct housekeeping activities	4.1. ***Clean equipment*** to maintain condition of equipment and ensure safe and efficient operations 4.2. Clean and store auxiliary service equipment
5. Shutdown in sequence and/or isolate equipment	5.1. Flush lines to remove all ***material*** 5.2. Shutdown or isolate equipment based on process and safety requirements 5.3. Perform ***post shutdown*** or isolation checks

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to distribute tailings:

- apply legislative, organisation and site requirements and procedures
- maintain, clean and operate, equipment
- apply hazard identification procedures
- apply hazardous goods handling requirements and procedures
- interpret reports
- apply lifting techniques (manual, cranes and loads)
- apply records maintenance requirements
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to distribute tailings:

- breakdown procedures
- emergency procedures
- environmental procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- flushing lines
- hazard identification and management
- identifying repair requirements
- isolation procedures
- metallurgical and technical data (basic)
- occupational health and safety procedures
- operational procedures and checks
- pumping system
- reclaim ponds/dams
- safety requirements
- securing pipes
- security procedures (e.g. shutting of gates)
- site procedures
- spillage procedures
- tailings

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- wet and dry working procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the distribution of tailings • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the distribution of tailings • working with others to undertake and complete the distribution of tailings that meets all of the required outcomes • consistent timely completion of the distribution of tailings that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the distribution of tailings

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure: These may include:	• compressors • cyclones • hand and power tools • hoses (water and air) • lines and ropes • loaders, pontoons, boats • thickening agents (e.g. de-scaling)
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • drive through plant • personnel availability
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • recycling (e.g. water) • run-off/spills • waste management and disposal • water quality
Start-up procedures may include:	• checking interlocks • checks distribution control system (DCS) • chutes • drive belts • isolations

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	• material transfer system condition (e.g. leaks, blockages) • pumping system • remote systems (e.g. telemetry) • valves
Plant may include:	• decant towers and ponds • pumps and siphons • spigots • tailings pipeline • valves
Indicator readings may measure:	• concentration (e.g. cyanide) • current • density • flow • levels • pressure • speed (e.g. pump) • unusual noises
Monitoring may include the checking of:	• blockages • current draw • detecting noises and smells • flow rates • missing components (e.g. spigots) • overloads • pressures • spillages • wear and tear
Overflow areas may include:	• collection dams • scour pits
Cleaning methods may include:	• hosing with water
Materials may include:	• reagents • slurry • tailings • water
Post-shutdown checks are:	• beaching • density • location of discharge points • regulate decant water removal • relocation of spigots

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Unit Sector(s)

Waste and By-products

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWBP203B Monitor tailings dam environment

Modification History

Not applicable.

Unit Descriptor

This unit covers the monitoring of the tailings dam environment in coal and metalliferous mining and extractive industries. It includes: monitoring the impact on flora and fauna; and monitoring the integrity of the dam.

Application of the Unit

This unit applies in all contexts to the monitoring of the environment as a part of the tailings management process. This unit is appropriate for those working in a operational roles, at worksites within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Monitor impact on flora and fauna	1.1. Access, interpret and apply ***compliance documentation*** relevant to monitoring of the tailings dam environment 1.2. Record presence/status of ***flora and fauna*** 1.3. Check and maintain condition of mine site parameters 1.4. Rescue wildlife to sustain life where safe and practical 1.5. Identify, address and report ***environmental issues*** 1.6. Adhere to emergency procedures 1.7. Identify, address and report potential risks and hazards 1.8. Communicate with other personnel using approved communication methods
2. Monitor integrity of the dam	2.1. Check and monitor dam wall characteristics and any sign of seepage 2.2. Maintain access to decant tower 2.3. ***Control*** quantity of water in dam to avoid weakening dam structure 2.4. ***Monitor*** water table depth and ***water quality*** to determine source of water and integrity of dam 2.5. Visually check for depositing of unauthorised materials

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to monitor tailings dam environment:

- apply legislative, organisation and site requirements and procedures
- apply equipment operation, minor maintenance and cleaning requirements and procedures
- apply hazard identification procedures
- apply hazardous goods handling techniques
- apply techniques for interpreting survey maps and data to locate key features of tailings dam
- apply lifting techniques (manual, cranes and loads)
- apply safe work practices
- use hand and power tools
- apply procedures for working in restricted access areas

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to monitor tailings dam environment:

- catchment/dam procedures
- emergency procedures
- environmental procedures
- safety requirements
- hazardous goods procedures and consequences of spills
- identifying repair requirements
- isolation procedures
- metallurgical and technical data
- occupational health and safety procedures
- operational procedures and checks
- pumping systems
- site procedures
- site safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the monitoring of the tailings dam environment • implementation of requirements, procedures and techniques for the safe, effective and efficient monitoring of the tailings dam environment • working with others to undertake and complete the monitoring of the tailings dam environment that meets all of the required outcomes • consistent timely completion of the monitoring of the tailings dam environment that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the monitoring of the tailings dam environment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Flora and fauna may include:	• bird life • mammals • native trees and vegetation
Environmental issues may include:	• drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • recycling • run-off • spills • waste management and disposal • water quality
Monitor will be:	• visual inspection
Water quality indicators may be:	• contaminants • colour change • settlings • other changes to usual characteristics
Control may be	• Report and action in accordance with site procedures

Unit Sector(s)

Waste and By-products

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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RIIWBP401A Apply and monitor site waste and by-products management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the applying and monitoring of site waste and by-products management plans in the coal mining and extractive industries. It includes: planning, preparing for, initiating, monitoring, adjusting and reporting on execution of the management plan.

Application of the Unit

This unit is appropriate for those working in a supervisory or technical specialist roles, within:

- Coal mining
- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, prepare for and initiate management plan activities	1.1. Access, interpret and apply ***compliance documentation*** relevant to applying and monitoring the site ***waste and by-products management plan*** 1.2. Access and share with team members the ***geological and survey data*** required to apply the management plan 1.3. Prepare an action plan, in consultation with team members, which makes best use of the available resource and takes into account the requirements of the site management plan and other relevant requirements and procedures 1.4. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of waste and by-products management in accordance with the site management plan and other relevant requirements and procedures 1.5. Issue clear and timely ***instructions*** to team members and others involved for the safe, effective and efficient conduct of waste and by-products management in accordance with the site management plan and other relevant requirements and procedures
2. Monitor, adjust and report on execution of the management plan	2.1. Ensure safe, effective and efficient execution of activities in accordance with the site management plan and other relevant requirements and procedures 2.2. Monitor the site management plan performance to ensure achievement of planned outcomes 2.3. Initiate adjustments to work programs to take into account non-achievement of planned outcomes 2.4. Complete and submit reports as required by the site management plan and other relevant requirements and procedures 2.5. Recommend changes to improve the safety, efficiency and effectiveness of the management plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply and monitor site waste and by-products management plans:

- apply legislative, organisation and site requirements and procedures
- provide team leadership
- apply procedures for the selection of operational techniques
- apply procedures for the selection and assignment of plant and equipment
- apply work plan development and administration requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply and monitor site waste and by-products management plans:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- waste and by-products management plan
- team leadership techniques
- operational techniques required for execution of the operations
- plant and equipment capabilities
- work planning techniques
- work monitoring methods

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the applying and monitoring of site waste and by-products management plans • implementation of appropriate procedures and techniques for the safe, effective and efficient applying and monitoring of site waste and by-products management plans • working with others to plan, prepare and apply site waste and by-products management plans • provision of clear and timely instruction and supervision by the individual of those involved in applying site waste and by-products management plans • evidence of the consistent successful applying and monitoring of site waste and by-products management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct site waste and by-products management plans
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the site waste and by-products management plans

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Waste and by-products management plan may cover:	• maintenance materials • used oils and lubricants • cleaning materials • out of specification "product" • contaminated product • tailings • segregation requirements for waste and by-products • treatment requirements • license requirements • surface water control requirements • engineering detail for construction of containment structures • recording of the quantity, nature and disposal method of waste and by-products
Geological data may include relevant site-specific information in relation to:	• rock type and characteristics • faults and joints • water tables or other water sources
Survey data may include relevant site-specific information in relation to:	• floor heights • bench widths • grades
Resources may include:	• labour • materials • services and equipment
Instructions may issued in	• nature and scope of tasks

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briefings, handovers, and work orders and may include:	• achievement targets • refuelling arrangements • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Unit Sector(s)

Waste and By-products

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWBP501A Implement site waste and by-product management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementation of site waste and by-product management plan in the mining and extractive industries. It includes: researching the waste and by-product requirements; maintaining tailings, waste and by-products disposal and water recycling operations; and constructing and maintaining dam systems.

Application of the Unit

This unit is appropriate for those working in a management and technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Research waste and by-product requirements	1.1. Access, interpret and apply ***compliance documentation*** relevant to the implementation of site waste and by-product management plans 1.2. Identify and document needs, quantity, quality, source and means of treatment of waste and by-product for production needs of the site 1.3. Obtain and maintain all appropriate licences for site waste and by-product management 1.4. Ensure the water quality and water-course and ground water contamination are monitored and recorded to meet ***legislative***, ***site and organisation's requirements***, community objectives and safe responsible work practices 1.5. Ensure site treatment works for contaminated drainage or development/processing waters are designed and located to satisfy relevant requirements 1.6. Establish management systems with appropriate inlet/outlet works and means of improving the natural settlement process 1.7. Plan and organise work schedules for operational best practice associated with managements systems and water quality specifications
2. Maintain tailing, waste and by-products disposal and water recycling operations	2.1. Ensure site water is treated for reuse in operations to meet environmental and quality standards efficiently 2.2. Undertake and record regular inspections of the water recycling system 2.3. Arrange audits of the water recycling system by internal/external auditors 2.4. Plan, organise and supervise the reuse or management of tailings, waste and by-products in a manner that satisfies relevant requirements
3. Construct and maintain dam	3.1. Plan and incorporate short and long term

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systems	dam requirements into the site management plan 3.2. Ensure the design and construction of dam systems meets relevant site conditions, standards and other relevant requirements 3.3. Undertake and document regular inspections of dams 3.4. Ensure techniques to minimise and/or recycle tailings are incorporated into dam construction 3.5. Encourage safe work practices in line with occupational health and safety requirements 3.6. Ensure best practice techniques in the design and construction of all dams are considered and incorporated and ensure dams meet all relevant requirements 3.7. Ensure the de-commissioning of dams is undertaken in accordance with safe working practices and other relevant requirements and that necessary approvals are attained

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement site waste and by-product management plans:

- apply legislative, organisation and site requirements and procedures
- apply people and processes management techniques
- apply capital equipment proposal preparation requirements and procedures
- apply operating budget preparation requirements and procedures
- apply techniques to analyse and review systems
- apply projects and tasks management techniques
- apply procedures for coordinating resources - human, financial and physical
- apply equipment and maintenance systems management requirements and procedures
- apply techniques for evaluating new and used equipment
- apply operating cost control requirements and procedures
- apply performance audit procedures
- apply requirements and procedures for gaining statutory/legal approvals
- apply tender specifications preparation requirements and procedures
- apply negotiation techniques and contract finalisation requirements and procedures
- apply techniques for implementing change
- access and use appropriate technologies
- apply management report preparation and presentation requirements and procedures
- apply conflict resolution techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement site waste and by-product management plans:

- occupational health and safety requirements and management
- environmental requirements and management
- statutory requirements and control
- quality system requirements
- legislative and organisation waste and by-product management requirements
- mine site operations
- mine site products and services

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- mine site plant and equipment
- team management
- resource monitoring
- negotiation techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementation of site waste and by-product management plans • implementation of procedures and techniques for the safe, effective and efficient implementation of site waste and by-product management plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the implementation of site waste and by-product management plans • consistent successful implementation of site waste and by-product management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementation of site waste and by-product management plan
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and

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	complete the implementation of site waste and by-product management plans • provision of clear and timely required support and advice on the implementation of site waste and by-product management plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislative, **site and organisation requirements and procedures** may include:	• risk management • statutory compliance • development approval, mining licences (or equivalent), which may include: • occupational health and safety • environmental • quality • purchasing • contract management • administration, including records and reports
Legislative regulatory bodies may include:	• Mineral Resources or equivalent body • safety and health authority • environmental authority • federal/state and local government • harbours and marine authority • port authority • road authority

Unit Sector(s)

Waste and By-products

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Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWBP502A Plan and monitor recycled material operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the planning and monitoring of recycling material operations in the mining and extractive industries. It includes; planning the recyclable material processing and monitoring the operations.

Application of the Unit

This unit applies at mine and extractive industries sites where the quality system provides for recycling. This unit is appropriate for those working in a management or technical specialist role, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan recyclable material processing	1.1. Access, interpret and apply ***compliance documentation*** relevant to the planning and monitoring of recycling material operations 1.2. Identify and explore market opportunities to assist the organisation to forecast trends and options 1.3. Undertake feasibility study to confirm market research and determine viability of project 1.4. Plan recyclable materials processing using on-site mobile equipment and fixed depots 1.5. Plan storage of raw feed and products 1.6. Test products to support ongoing quality assurance 1.7. Investigate the blending of secondary aggregates with A-grade materials to produce road base replacements 1.8. Design compatible equipment for the recycling process, storage and transport of reclaimable materials 1.9. Design process in accord with environmental and ***statutory/legal requirements***
2. Monitor operations	2.1. Monitor growth potential of the recycling industry 2.2. Monitor, appraise and introduce new techniques and new systems and adopt products 2.3. Monitor production rates and associated environmental impact results 2.4. Organise stockpiling and removal of separated saleable materials having a high level of cleanliness from ones that need disposal/tipping 2.5. Undertake ongoing testing of product to comply with quality assurance requirements 2.6. Produce cost analysis reports in line with organisation requirements 2.7. Prepare and circulate records and reports to appropriate personnel, in line with organisation requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to plan and monitor recycled material operations:

- apply legislative, organisation and site requirements and procedures
- apply people and processes management techniques
- apply capital equipment proposal preparation requirements and procedures
- apply business and resource plan development requirements and procedures
- apply operating budget preparation requirements and procedures
- analyse and review operations/costs
- apply project and task management techniques
- apply procedures for coordinating resources - human, financial and physical
- apply procedures for delivering and maintaining services to required specifications
- apply equipment and maintenance systems management requirements and procedures
- apply techniques for evaluate new and used equipment
- apply operating costs control requirements and procedures
- apply procedures to audit recycled material operations performance - finance, safety, environment, quality assurance, legislative compliance, resource utilisation
- prepare tender specifications
- apply negotiating and contract finalisation techniques
- apply procedures for implementing change
- access and use appropriate technologies
- prepare and present management reports
- apply techniques for negotiations with internal/external customers, community and statutory/legal authorities
- apply conflict resolution techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to plan and monitor recycled material operations:

- metalliferous mining recycled material operations
- metalliferous mining products and services
- metalliferous mining plant and equipment
- team management

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- quality system
- statutory control
- organisational objectives
- resource monitoring
- risk management: principles, strategies and applications
- customer/client relations
- organisational change and development
- environmental management
- OHS
- computer applications
- negotiation techniques
- statistics

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the planning and monitoring of recycled material operations • implementation of procedures and techniques for the safe, effective and efficient planning and monitoring of recycled material operations • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the planning and monitoring of recycled material operations • consistent successful planning and monitoring of recycled materials operations
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the planning and monitoring recycling material operations
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the planning and monitoring of

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	recycled material operations • provision of clear and timely required support and advice on the planning and monitoring of recycled material operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Statutory/legal requirements may include:	• environmental -noise/air/water • quantities • zonings • boundaries • processes • royalties • rehabilitation • freehold • council • lease • by-laws • contamination • wildlife corridors
Statutory bodies may include:	• Mineral Resources or appropriate body • OHS Authority • Environmental • federal/state/local government • Water Supply • Harbours and Marine • Port Authority • Road Authorities • Company policy and procedures • Planning and development would typically include: • interpreting and communicating information

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	• surveying • infrastructure/technology requirements and would typically incorporate the following specifications: • products • production rate • recyclable materials • stack emissions • hours per week of operation • waste and stockpiles • water/tailings management • transportation systems • all weather development drives and openings

Unit Sector(s)

Waste and By-products

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWBP601A Establish and maintain waste and by-product management system

Modification History

Not applicable.

Unit Descriptor

This unit covers establishing and maintaining waste and by-product management systems in the mining and extractive industries. It includes: identifying and researching requirements; facilitating site environmental investigations, design of dams and selection of equipment; establishing water recycle procedures, tailings disposal, water recycling operations procedures, installation and commissioning procedures, systems for operation and maintenance, and the review and audit of the systems and their equipment.

Application of the Unit

This unit is appropriate for those working in a management or technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and research requirements	1.1. Access, interpret and apply ***compliance documentation*** relevant to related to establishing and maintaining waste and by-product management systems 1.2. Analyse organisation goals, objectives and strategies as they effect waste and by-product management 1.3. Identify the requirements for and purpose of waste and by-product managements systems in accordance with ***legislative and organisation's requirements*** and the systems of working the site 1.4. Develop and implement strategies, which translate the objective into the planning process
2. Facilitate site environmental investigations	2.1. Establish information requirements and ensure information sources are identified and accessed 2.2. Establish strategies and systems to support analysis of the worksite environments 2.3. Ensure worksite environment are investigated to identify and assess the factors that impact on waste and by-product development 2.4. Ensure market opportunities are identified and explored to assist the organisation to forecast trends and options 2.5. Ensure threats and opportunities are identified, analysed and used to optimise project outcomes 2.6. Ensure titles search are undertaken 2.7. Ensure legal obligations are identified and documented
3. Establishing of water recycling procedures	3.1. Ensure a detailed scoping of the work requirement and key selection criteria is conduct and that ***hazard*** identification and ***risk*** analysis is carried out 3.2. Ensure procedures for need, quantity, quality, source and means of treatment of water for production needs are developed and implemented

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	3.3. Ensure procedures for water quality and watercourse groundwater contamination are develop and implemented to meet legislative and organisation's requirements, community objectives and safe responsible work practices 3.4. Ensure site treatment works are designed and located for contaminated drainage or development/processing waters, to satisfy relevant legislative and organisation's requirements 3.5. Ensure procedures with appropriate inlet/outlet works and means of improving the natural settlement process are developed and implemented 3.6. Ensure work schedules for operational best practice associated with management systems and water quality specifications are developed and implemented
4. Establish tailing disposal and water recycling operation procedures	4.1. Ensure a procedure for treated site water reuse to meet environmental and quality standards is developed and implemented 4.2. Ensure a program for regular inspections of the water recycling system is developed and implemented 4.3. Ensure procedures for tailings reuse to satisfy regulations, environmental criteria and company policies are developed and implemented
5. Facilitate the design of dam systems	5.1. Ensure the requirements for and purpose of dam management systems are identified in accordance with legislative and organisation's requirements and the system of working the site 5.2. Ensure a specification for the dam management system is developed from a comprehensive analysis of site requirements 5.3. Ensure dam de-commissioning procedures are developed in accordance with safe working practices and legislative and organisation's requirements
6. Facilitate the selection of equipment for waste and by-product management	6.1. Ensure the requirements for and purpose of waste and by-product equipment is identified against system requirements

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systems	6.2. Ensure a detailed scoping of the work requirement and key selection criteria including hazard identification and risk analysis is conducted and developed 6.3. Ensure the requirements for and purpose of waste and by-product equipment is identified against systems requirements 6.4. Develop a specification for the required waste and by- product equipment 6.5. Ensure the preferred equipment solutions are selected on the basis of performance against specification requirements
7. Establish installation and commissioning procedures	7.1. Establish a procedure to identify hazards and analyse and evaluate risks associated with the installation of waste and by-product systems and equipment 7.2. Ensure the integration of new and existing systems and process is planned and implemented to achieve optimum performance 7.3. Ensure safe operating procedures and rules are developed from a detailed analysis of legislative and organisation's requirements 7.4. Ensure procedures for installing and commissioning waste and by-product systems and equipment are developed and implemented 7.5. Ensure a program, including systems and procedures, to satisfy identified waste and by-product training requirements is implemented 7.6. Ensure emergency response and evacuation systems, plans and procedures are implemented in accordance with legislative and organisation's requirements
8. Establish systems for the operation and maintenance of waste and by-product management systems and equipment	8.1. Ensure operational procedures for waste and by-product systems and equipment are developed and implemented from legislative and organisation's requirements and incorporated into site documentation. 8.2. Ensure maintenance procedures for waste and by-product systems and equipment are developed from legislative and organisation's requirements and incorporated into site documentation.

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	8.3. Ensure procedures for reviewing and modifying work processes are develop and implemented
9. Establish systems for audit and review of waste and by-product systems and equipment	9.1. Establish and ensure implementation of procedures to evaluate and confirmation of system/equipment compliance with statutory and site requirements. 9.2. Ensure that future waste and by-product systems and equipment requirements are identified, assessed and incorporated into planning processes. 9.3. Establish and ensure the implementation of procedures to confirm the currency and compliance of waste and by-product maintenance and safety standards. 9.4. Establish and ensure implementation of the system for recording and reporting of waste and by-product and equipment information. 9.5. ***Audit*** the waste and by-product training program for currency and relevance. 9.6. Establish and ensure implementation of procedures for incorporating feedback into the audit/review system. 9.7. Audit emergency response and evacuation systems plans and procedures for compliance with site requirements. 9.8. Establish and ensure implementation of procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain waste and by-product management system:

- apply legislative, organisation and site requirements and procedures
- access and use appropriate information management technologies
- apply techniques for analysing and reviewing waste management systems
- apply techniques for auditing waste management performance - energy, safety, environment, quality assurance, legislative compliance
- apply operating budget preparation requirements and procedures
- apply operating cost control requirements and procedures
- apply techniques for the coordination of resources - human, financial and physical
- apply business and resource plan development requirements and procedures
- apply techniques for the evaluation of new and used equipment
- apply the requirements and procedures for gaining statutory/legal approvals
- apply techniques for implementing change
- apply people and process management techniques
- apply conflict resolution techniques
- apply project and task management requirements and procedures
- apply procedures for monitoring and maintaining waste management systems
- apply tender specifications preparation requirements and procedures
- apply negotiation techniques and requirements and procedures for finalising contracts
- apply management report preparation and presentation requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain waste and by-product management system:

- dam design and construction
- emergency response and disaster planning
- environmental management
- financial management
- mine plans
- mine products and services

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- mining operations
- negotiation techniques
- organisational objectives
- quality system
- risk management, principles, strategies and applications
- safety and health requirements
- statutory control requirements
- team management
- training and assessment systems
- water recycling
- training systems
- emergency response and evacuation planning processes and techniques

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing and maintenance of waste and by-product management systems • implementation of procedures and techniques for the safe, effective and efficient establishing and maintenance of waste and by-product management systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of programs that best meet the required outcomes • working with others to undertake and complete the establishing and maintenance of waste and by-product management systems • consistent and timely establishing and maintenance of waste and by-product management systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to establishing and maintenance of waste and by-product management systems

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	• consistent and timely gaining of approval of waste and by-product management systems • provision of clear, timely required support and advice on the implementation of waste and by-product management systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Legislative and organisation requirements and procedures may include:	• risk management • statutory compliance • development approval, mining licences (or equivalent), which may include: • occupational health and safety • environmental • quality • purchasing • contract management • administration, including records and reports
Legislative regulatory bodies may include:	• Mineral Resources or equivalent body • safety and health authority • environmental authority • federal/state and local government • harbours and marine authority • port authority • road authority
Hazard is defined as:	• a source of potential harm or a situation with a potential to cause loss
Risk is defined as:	• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Audit is defined as:	• a systematic examination against defined criteria to determine whether activities and related results conform to planned

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	arrangement, and whether these arrangements are implemented effectively and are suitable to achieve the organisation policy and objectives

Unit Sector(s)

Waste and By-products

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWMG201A Conduct dewatering activities in surface operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conducting of dewatering activities in surface operations in the coal mining and extractive industries. It includes the planning and preparing for operations; installing, operating and recovering dewatering equipment; and carrying out operator maintenance.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Coal mining
- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conducting of dewatering activities in surface operations 1.2. Obtain, interpret and clarify ***work instructions*** for satisfactory completion of operations 1.3. Develop ***dewatering plan*** 1.4. Prepare ***resources*** and ***equipment*** for the task 1.5. Prepare ***sumps and pads*** to work requirements 1.6. Transport ***pump***, ***lines***, fittings, associated equipment and required tools to and from the site
2. Install, operate and recover dewatering equipment	2.1. Resolve ***coordination*** requirements with others at the site prior to commencing and during work activities 2.2. Install and dismantle dewatering equipment 2.3. Carry out pre-start, start-up and shutdown procedures 2.4. Start, test and adjust dewatering equipment 2.5. Monitor and adjust dewatering equipment performance to satisfy pumping requirements and to appropriately meet ***changing work conditions*** 2.6. Recognise and respond to hazardous and emergency situations 2.7. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the allocated equipment
3. Carry out operator maintenance	3.1. Carry out dewatering equipment and systems inspections and fault finding 3.2. Carry out operational maintenance, servicing, lubricating and housekeeping tasks 3.3. Process records and reports

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct dewatering activities in surface operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply techniques for communicating with and coordinating activities with others
- apply requirements and procedures for selecting dewatering methods
- interpret ground conditions
- apply pumping equipment operating requirements and procedures
- apply procedures for identifying potential hazards
- apply procedures for responding to changing circumstances
- use small hand tools
- apply procedures for complying with environmental requirement
- work wearing personal protective equipment
- apply procedures for working in confined spaces
- apply equipment records maintenance requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct dewatering activities in surface operations:

- site hazard identification and response procedures
- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements
- site communication procedures
- site geological and survey data
- site operational procedures
- dewatering equipment pre-start, start-up, operating and shutdown procedures and techniques
- dewatering equipment characteristics, technical capability and limitations
- drainage principles and processes
- site record keeping requirements

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- site personal protective equipment requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting dewatering activities in surface operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of dewatering activities in surface operations • working with others to undertake and complete dewatering activities in surface operations that meet all of the required outcomes • consistent timely completion of dewatering activities in surface operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete dewatering activities in surface operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • site speed limits • working safely around overhead powerlines • working safely near bench face or similar risk area
Dewatering plan may include:	• identification of required pump type and capacity • identification of pump locations • discharge points and routes configuration • layout and resources required for lines and fittings • obtaining and transportation of equipment/plant and materials to the appropriate sites • identification and satisfaction of environmental requirements

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	• site lighting • other human and materials resources issues
Resources may include:	• personnel • pumps • vehicles • equipment • materials

Equipment may include:	• sumps
	• valves
	• pipes
	• hoses
	• hand tools
	• clamps
	• suction and delivery lines
	• holding tanks
	• machinery including:
	  • load haul dump
	  • multipurpose vehicles
	  • pipe installers
	• power sources including:
	  • electric
	  • air
	  • hydraulic
	  • gravity feed
	  • syphons

Sump and pad preparation may include:	• site lighting • access roads • security arrangements • service lines
Pump types may include:	• centrifugal and positive displacement, including submersible • piston • diaphragm • wheel mounted • pontoon mounted • skid mounted • self contained with hose wheel
Lines may be:	• intake • delivery • metal • PVC and HDPE

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	• Canvas (lay flat) • Other materials
Coordination with others may include:	• mobile plant operators • processing plant operators • maintenance personnel
Changing work conditions may include:	• weather conditions • day and night

Unit Sector(s)

Water Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWMG202A Conduct dewatering operations in underground mining operations

Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of dewatering operations in underground coal and metalliferous mining operations. It includes: the planning and preparing for dewatering activities; installing, operating and recovering dewatering equipment; and carrying out operator maintenance.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Coal mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for dewatering activities	1.1. Access, interpret and apply ***compliance documentation*** relevant to the conduct of dewatering operations in underground mining operations 1.2. Obtain, interpret and clarify ***work instructions*** for the allocated task 1.3. Select appropriate type of ***resources and equipment*** according to job type and specifications to maximise efficiency and effectiveness of work activities 1.4. Develop ***dewatering plan*** 1.5. Identify and obtain any signage requirements are identified and obtained 1.6. Prepare ***sumps and pads*** to work requirements 1.7. Coordinate and transport ***pump***, ***lines***, fittings, associated equipment and required tools to and from the site 1.8. Identify, address and report any ***environmental issues***
2. Install, operate and recover dewatering equipment	2.1. Resolve ***coordination*** requirements with others at the site prior to commencing and during work activities 2.2. Access and apply ***safety requirements and procedures*** throughout the work 2.3. Install and dismantle dewatering system in accordance with the plan and other appropriated regulations and specifications 2.4. ***Carry out pre-start***, ***start-up and shutdown*** procedures 2.5. Monitor and adjust dewatering system performance to satisfy pumping requirements and to appropriately meet ***changing work conditions*** 2.6. Recognise and respond to hazardous and emergency situations 2.7. Ensure discharged water is dispersed as required 2.8. Complete work in accordance with the agreed plan and outcomes and within the operating capacity of the allocated

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	equipment 2.9. Recover dewatering system 2.10. Work area is cleared and materials disposed of or recycled
3. Carry out operator maintenance	3.1. Carry out dewatering ***equipment*** and systems inspections and fault finding 3.2. Carry out operational maintenance, servicing, lubricating and housekeeping tasks 3.3. Process records and reports

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct dewatering operations in underground mining operations:

- apply legislative, organisation and site requirements and procedures
- apply operational safety requirements
- access, interpret and apply technical information
- apply techniques to communicate with and coordinate activities with others
- apply procedures to select dewatering methods suitable to the situation
- interpret ground conditions
- apply pumping equipment operating requirements and procedures
- apply procedures for identifying potential hazards
- apply procedures for responding to changing circumstances
- use small hand tools
- apply procedures for complying with environmental requirement
- work wearing personal protective equipment
- apply procedures for working in confined spaces
- apply equipment records maintenance requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct dewatering operations in underground mining operations:

- site hazard identification and response procedures
- site risk control procedures
- site and equipment health and safety procedures
- site environmental requirements and constraints
- site quality requirements
- site communication procedures
- site geological and survey data
- site operational procedures
- dewatering equipment pre-start, start-up, operating and shutdown procedures and techniques
- dewatering equipment characteristics, technical capability and limitations
- drainage principles and processes
- site record keeping requirements

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- site personal protective equipment requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for conducting dewatering operations in underground mining operations • implementation of requirements, procedures and techniques for the safe, effective and efficient conducting of dewatering operations in underground mining operations • working with others to undertake and complete dewatering operations in underground mining operations that meets all of the required outcomes • consistent timely completion of dewatering operations in underground mining operations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.

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	• Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete dewatering operations in underground mining operations

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may come from briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues • site speed limits • working safely around overhead powerlines • working safely near bench face or similar risk area
Resources may include:	• personnel • pumps • vehicles • equipment • materials
Equipment may include:	• sumps • valves • pipes • hoses • hand tools

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	• clamps
	• suction and delivery lines
	• holding tanks
	• machinery including:
	  • load haul dump
	  • multipurpose vehicles
	  • pipe installers
	• power sources including:
	  • electric
	  • air
	  • hydraulic
	  • gravity feed
	  • syphons

Dewatering plan may include:	• identification of required pump type and capacity • identification of pump locations • discharge points and routes configuration • layout and resources required for lines and fittings • obtaining and transportation of equipment/plant and materials to the appropriate sites • identification and satisfaction of environmental requirements • site lighting • other human and materials resources issues
Sump and pad preparation may include:	• site lighting • access roads • security arrangements • service lines
Pump types may include:	• centrifugal and positive displacement, including submersible • piston • diaphragm • wheel mounted • pontoon mounted • skid mounted • self contained with hose wheel
Lines may be:	• intake • delivery • metal

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	• PVC and HDPE • Canvas (lay flat) • Other materials
Environmental issues may include:	• waste management • water quality protection • flooding • fumes • noise • vibration • dust • clean up management
Coordination with others may include:	• mobile plant operators • processing plant operators • maintenance personnel
Safety requirements and procedures may include:	• legislation and regulations • relevant Australian standards • management plans • OHS policy • code of practice • manufacturer instructions • safe working procedures
Changing work conditions may include:	• weather conditions • day and night

Unit Sector(s)

Water Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWMG203A Drain and dewater civil construction site

Modification History

Not applicable.

Unit Descriptor

This unit covers draining and/or dewatering of civil construction project sites. It includes: planning and preparing; positioning sedimentation control; remove surface water; constructing sump and wells; removing water from sumps or wells, trenches and pits; and cleaning up.

Application of the Unit

This unit specifies the competency required to drain and/or dewater civil construction project sites for environmental protection purposes and the control of water, which may affect construction. It is appropriate for those working in a operational roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***draining and/or dewatering project sites*** 1.2. Obtain, confirm and apply ***work instructions*** relevant to the tasks to the allotted task 1.3. Obtain, confirm and apply safety requirements from the site safety plan and organisational policies and procedures, to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project traffic management plan 1.5. Select plant, tools and equipment to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan to the allotted task
2. Position sedimentation control	2.1. Position sedimentation controls according to project environmental management plan 2.2. Construct sedimentation control barriers in accordance with the environmental management plan 2.3. Position geo-fabrics and/or woven wire according to specification and to the environmental management plan
3. Remove surface water	3.1. Establish temporary drainage systems to drain or divert surface and sub-surface water to the storm water drainage system 3.2. Remove slab and site surface water and/or directed to the temporary drainage system 3.3. Fill surface holes and depressions 3.4. Drain surface water to drainage system using adequate fall
4. Construct sump/wells	4.1. Locate sump and/or well at the lowest point to be drained to maximise pump efficiency 4.2. Construct sumps and/or wells to work

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	instructions
5. Remove water from sumps/wells, trenches and pits	5.1. Install surface or submersible pumps 5.2. Locate surface pump as close as practicable to the sump or well 5.3. Pump water to temporary drainage system according to the project environmental management plan 5.4. Disperse discharged water using approved procedures
6. Clean up	6.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, ***tools and equipment*** in accordance with manufacturer's recommendations and standard work practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to drain and dewater civil construction site:

- apply legislative, organisation and site requirements and procedures
- apply operational, maintenance and basic diagnostic procedures
- apply pump operating requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to drain and dewater civil construction site:

- site and equipment safety requirements
- drainage and dewatering
- sedimentation controls
- grading and levelling
- free water
- pumps
- environmental considerations
- construction principles
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for draining and dewatering of civil construction site
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the draining and dewatering of civil construction site, which is to include:
	  • draining surface water from a site using surface drains
	  • dewater a trench or pit using at least one type of pump on two separate projects
	  • establishing sedimentation controls for at least one project, and
	  • constructing a sump
	• working with others to undertake and complete the draining and dewatering of civil construction sites that meets all of the required outcomes
	• consistent timely completion of the draining and dewatering of civil construction sites that safely, effectively and efficiently meets the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• draining surface water from a site using surface drains
	• dewater a trench or pit, using at least one type of pump on two separate projects
	• establishing sedimentation controls for at least one project
	• constructing a sump
	  • consistently achieving the required

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	outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the draining and dewatering of civil construction site
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Areas to be **drained and/or dewatered** are to include:	• control of surface water, bores, coffer dam, springs, creeks, wetland water, seepage water in trenches and pits and low lying natural ground where water may not escape
Drainage is to include:	• graded surface level gutters and ditches excavated manually or by machine and various types of plastic piping
Dewatering techniques are to include:	• sumps, wells, submersible pumps, vacuum pumps, surface pumps and sludge pumps
Project sites include:	• road construction sites, excavation projects and construction sites in close proximity of wetlands or active water
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include: dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements may be from the site safety plan and organisational policies and procedures and may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • safe operating procedures, which are to include: recognising and preventing hazards

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	associated with underground services, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • hazards and risks, which may include: uneven/ unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures, which are to include: emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
Traffic **signage** and devices are to include:	• temporary warning signs, regulatory and traffic cones
Traffic **signage** and devices may include:	• highway traffic signs, site safety signage, guide signs, warning signs, barriers, hazard markers, portable traffic signals, bollards, arrow boards, vehicle mounted signs, flashing lights, barricades, and traffic conditions signage
Environmental Requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Materials are to include:	• various types of plastic piping, silt fences, rocks or straw bales
Tools and equipment are to include:	• hoses, shovels and pumps

Unit Sector(s)

Water Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWMG301A Control construction site water table

Modification History

Not applicable.

Unit Descriptor

This unit covers controlling construction site water table in the civil construction industry. It includes: planning and preparing; installing drainage and dewatering systems; establishing water treatment systems; operating, maintaining and removal of the systems; and cleaning up.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to construction site water table ***drainage and dewatering systems*** 1.2. Obtain, confirm and apply ***work instructions*** to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select plant, ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, and check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan to the allotted task
2. Install site drainage/ dewatering system	2.1. Identify proposed permanent stormwater outlets from site plans and drawings 2.2. Erect barricades around the excavation/ installation area 2.3. Construct sumps and wells to specified levels and locations 2.4. Install well points, spears or wick drains to specified configuration and required depths 2.5. Place gravel and filter material in spears, sumps and wells to level above that of existing water table 2.6. Install surface or submersible pumps in designed locations to spears, sumps and wells 2.7. Connect suction hoses to sumps, wells, spears and pumps in accordance specifications and site designed drainage 2.8. Fit pipes and hoses to well points, spears and pumps in accordance with specifications and site designed drainage
3. Establish stormwater treatment	3.1. Set out holding pond and support

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system	construction operations 3.2. Monitor and respond to water quality and treatment standards 3.3. Release water which meets the approved quality criteria into the main system
4. Operate and maintain drainage and dewatering system	4.1. Activate pumps to lower water table level to designed requirement 4.2. Maintain pumps 4.3. Maintain site drainage and dewatering system to maximise water flow to project requirements
5. Remove and make good	5.1. Disconnect and remove pumping system 5.2. Withdraw and remove well points and spears 5.3. Restore area to environmental management plan
6. Clean up	6.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to control construction site water table:

- apply legislative, organisation and site requirements and procedures
- apply procedures for dewatering process
- interpret engineering drawings and sketches
- apply project quality requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to control construction site water table:

- application of principles relating to site dewatering
- terminology, definitions and installation methods
- hazardous materials and hazardous situations
- environmental statements, erosion, sedimentation and waste disposal
- site and equipment safety requirements including appropriate state or territory legislation regulations and codes
- dewatering system equipment characteristics, technical capabilities and limitations
- procedures for dewatering process
- processes for interpreting engineering drawings and sketches
- dewatering system operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for controlling construction site water table
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the control of construction site water table, which is to include:
	  • one involving spearing, and
	  • at least one requiring the establishment and operation of a treatment system
	• working with others to undertake and complete the control of construction site water table that meets all of the required outcomes
	• consistent timely completion of the control of construction site water table that safely, effectively and efficiently meets the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	• one involving spearing, and
	• at least one requiring the establishment and operation of a treatment system
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the control of construction site water table

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

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	equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Drainage and dewatering systems are to include:	• spears and may include wick drains, well points, sumps and holding ponds
Temporary **drainage systems** may include:	• slopes on ground surface, formed spoon drains, laid drains and sumps
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include: dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements may come from the site safety plan and organisational policies and procedures and may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • personal protective equipment, including that prescribed under legislation, regulation and workplace policies and practices • safe operating procedures, including: recognising and preventing hazards associated with overhead services, other machines, personnel, restricted access barriers, traffic control, working in proximity to others, worksite visitors and the public • hazards and risks, including: uneven/unstable

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	terrain, trees, fires, underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to emergency shutdown and stopping, organisational First Aid requirements and evacuation
Tools and equipment are to include:	• hand tools, pumps and hand operated excavation equipment and may include lighting systems, generators, boats, pipe reels and mechanical excavation plant
Environmental Requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Materials may include:	• natural materials may include but are not limited to clays, silts, stone, gravel, mud, rock, sand, topsoil and bituminous mixes • materials may include piping, conduit and consumables associated with dewatering systems

Unit Sector(s)

Water Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWMG302A Reclaim and treat water

Modification History

Not applicable.

Unit Descriptor

This unit covers reclaiming and treating of water in the metalliferous mining industry. It includes: planning and preparing, treating water, extracting water, operating and monitoring equipment, and conducting housekeeping activities.

Application of the Unit

This unit applies in all contexts to the reclaiming and treating of water during processing and also applies to the treatment of raw water to make it potable. It is appropriate for those working in technician roles, at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to reclaiming and treating of water 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of reagents 1.6. Perform equipment ***pre-start checks*** to ensure equipment is ready for operation 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report ***environmental issues*** 1.9. Adhere to emergency procedures
2. Treat water	2.1. Dose reagents at approved levels 2.2. Take sample and test according to site requirements 2.3. ***Monitor*** water storage levels and reject and or permeate flows
3. Extract water	3.1. Pump water to storage
4. Operate and monitor equipment	4.1. Read and interpret data from equipment ***indicators*** to maintain flow rates 4.2. Continuously inspect ***plant*** and identify defects and potential problems 4.3. Adjust equipment to approved operating parameters to optimise performance, maintain efficient water treatment systems and to meet water quality targets 4.4. Control feed to equipment 4.5. Observe ***safety procedures***
5. Conduct housekeeping activities	5.1. Clean plant and equipment 5.2. Clean and store ***auxiliary equipment*** 5.3. Manage and report hazards 5.4. Complete all required documentation clearly, concisely and on time 5.5. Pass on shift changeover details to

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	oncoming shift

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to reclaim and treat water systems:

- apply legislative, organisation and site requirements and procedures
- identify hazards
- apply hazardous goods handling requirements and procedures
- interpret reports
- apply lifting techniques (manual, cranes and loads)
- apply records maintenance requirements
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to reclaim and treat water systems:

- breakdown procedures
- contaminants
- emergency procedures
- environmental procedures
- equipment processes, technical capability and limitations
- equipment safety requirements
- hazardous goods procedures and consequences of spills
- OHS procedures
- operational procedures and checks
- reagents
- site procedures
- site safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for reclaiming and treating of water • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the reclaiming and treating of water • working with others to undertake and complete the reclaiming and treating of water that meets all of the required outcomes • consistent timely completion of the reclaiming and treating of water that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second

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	language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the reclaiming and treating of water

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Pre-start checks may include:	• availability of equipment • detection of conditions that are unusual • job requirements • personnel availability • walk through the plant/around settling pond/drive along pipe line
Environmental issues may include:	• drainage • emissions • flora and fauna • hazardous chemicals • recycling • run-off • spills • waste management and disposal • water quality
Monitoring may include **the checking of**:	• blockages and spillages • concentration levels • fumes and other toxins (e.g. hydrogen cyanide) • wear and tear
Indicator readings may measure:	• current • flow • level • pressure • unusual noises (e.g. cavitation)

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	• vibrations
Plant may include:	• pumps (fixed) • lines • storage tanks/dams
Safety procedures may include:	• radiation sources • contamination • pressurised systems • reagents
Equipment and plant cleaning methods may include:	• de-scaling
Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:	• discharge lines • generated sets • hand and power tools • hoses (water and air) • level indicators • pump system • strainers

Unit Sector(s)

Water Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWMG401A Apply and monitor the site water management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of the site water management plan in the coal mining and extractive industries. It includes: planning, preparing for and initiating tasks; and monitoring, adjusting and reporting on the execution of the plan.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, within:

- Coal mining
- Extractive industries

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan, prepare for and initiate tasks	1.1. Access, interpret and apply ***compliance documentation*** relevant to the application and monitoring of the site water management plan 1.2. Access and share with team members the ***geological***, ***hydrological and survey data*** required to complete the site water management tasks 1.3. Prepare an action plan, in consultation with team members, which makes best use of the available resource and takes into account the requirements of the ***site water management plan*** 1.4. Acquire and make available the necessary ***resources*** for the safe, effective and efficient conduct of the tasks 1.5. Issue clear and timely ***instructions*** to team members and others involved for the safe, effective and efficient conduct in the tasks
2. Monitor, adjust and report on execution of the plan	2.1. Ensure safe, effective and efficient execution of tasks in accordance with the management plan and other relevant requirements and procedure 2.2. Monitor management plan performance to ensure achievement of planned outcomes 2.3. Initiate adjustments to work programs to take into account non achievement of planned outcomes 2.4. Complete and submit reports as required 2.5. Recommend changes to improve the safety, efficiency and effectiveness of the management plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply and monitor the site water management plan:

- apply legislative, organisation and site requirements and procedures
- interpret legislative requirements and procedures
- interpret site requirements and procedures
- provide team leadership
- apply procedures for selecting construction and operational techniques
- apply procedures for selecting and assigning plant and equipment
- apply procedures for developing and administering work plans

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply and monitor the site water management plan:

- legislative, manufacturer's and site requirements and procedures
- site risk, legislative compliance, health, safety, environmental, quality and communication requirements and procedures
- site water management plan
- team leadership techniques
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- work monitoring methods
- training systems
- emergency response and evacuation planning processes and techniques

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Evidence Guide

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Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for applying and monitoring site water management plans • implementation of appropriate procedures and techniques for the safe, effective and efficient application and monitoring of site water management plans • working with others to plan, prepare and conduct the site water management plans • provision of clear and timely instruction and supervision by the individual of those involved in the application of site water management plans • evidence of the consistent successful application and monitoring of the site water management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct site water management plans
	  • provision of clear and timely instruction and supervision by the individual of those involved in the application of site water management plans

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Geological data may include relevant site specific information in relation to:	• rock type and characteristics • faults and joints • water tables or other water sources
Hydrological data may include:	• rainfall • surface water, existing streams and dams • catchment areas and runoff characteristics • groundwater and bores
Survey data may include relevant site specific information in relation to:	• floor heights • bench widths • grades
Site water management plan may include:	• site water balances for peak and low requirements • water re-use and recycle requirements • water withdrawals constraints, including volume and source use in normal and dry weather • pumping capacities requirements to meet current and future production needs • planned volume and quality of discharge • segregation requirements for clean and contaminated flows • contaminated flows treatment program • waste water volume usage and quality and how and where to store for treatment then discharge

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	• groundwater sources protection requirements • existing neighbour water usage and discharge considerations • surface water resources control requirements • quality and potential of ground water regime protection measures, including local wells and surface water sources) • testing management system for discharge waters, in accordance with legislative, organisation and site requirements and procedures • contingency plans for flood routing of waters in pit's operational area covering peak flows • pumping of waters from flooded pit, settlement ponds, holding dams or sump pits • engineering detail for construction of table drains, culverts, channels, pipe works, trenches, manhole, gully pits as part of surface drainage and total reticulation network • water flow, pipe laying techniques and earthwork activities associated with drainage and rural road geometry • work pits development • ongoing maintenance work for the drainage scheme of the quarry site, including pit works, roadways, administration areas and boundary conditions • site drainage and waste water treatment processes monitoring requirements • recording of the quality of site drainage effluent to meet environmental and company requirements • water treatment systems design
Resources may include:	• labour • materials • services • equipment
Instructions may be issued in briefings, handovers, and work orders and may include:	• nature and scope of tasks • achievement targets • operational conditions • obtaining permits required • site layout • out-of-bounds areas • worksite inspection requirements

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	• lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Unit Sector(s)

Water Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWMG402A Monitor and coordinate waste and process water treatment

Modification History

Not applicable.

Unit Descriptor

This unit covers monitoring and coordinating of waste and process water treatment in the metalliferous mining industry. It includes: monitoring treatment plant performance; controlling chemical use; monitoring and controlling processes; and compiling process records.

Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Monitor treatment plant performance	1.1. Access, interpret and apply ***compliance documentation*** relevant to the monitoring and coordinating of waste and process water treatment 1.2. Carry out routine plant ***inspections*** 1.3. Collect samples and conduct and analyse ***process tests*** to determine performance against plant ***operational requirements*** 1.4. Collect, interpret, record and report ***process data*** 1.5. Conduct calculations to determine ***process*** performance
2. Control chemical use	2.1. Use, handle and store chemicals in accordance with ***organisational and statutory requirements*** 2.2. Determine, prepare and conduct chemical dosing in accordance with plant processes 2.3. Maintain information related to chemical supply and usage
3. Monitor and control processes	3.1. Monitor processes to maintain parameters of operation 3.2. Identify and report process faults and operational condition of plant 3.3. Adjust integrated processes to optimise system performance
4. Compile process records	4.1. Compile ***records*** and reports from plant and system data

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to monitor and coordinate waste and process water treatment:

- apply legislative, organisation and site requirements and procedures
- use electronic monitoring and metering systems
- use manual chart recording systems
- use laboratory testing and sampling equipment
- use computerised equipment
- apply techniques for operating on-road and off-road vehicles
- operate communication equipment
- interpret reports
- apply procedures for identifying and managing hazards
- apply hazardous goods handling techniques and management
- apply lifting techniques (manual, cranes and loads)
- apply records maintenance requirements
- apply safe work practices
- use hand and power tools
- apply defects reporting requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to monitor and coordinate waste and process water treatment:

- water system hydraulics
- system layout
- lock out procedures for mechanical and electrical installations
- policies and procedures and legislation
- relevant utilities and service bodies
- communication systems
- materials handling
- environmental, landscape, ground structure of work area
- risk factors and potential hazards
- equipment operation, capacity and limitations
- effect of weather and conditions on operation of site or plant
- mathematical calculations

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- pipes and fittings/pumping and valve systems
- mechanical and electrical control systems
- shutdown and recharging requirements
- chemical usage

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the monitoring and coordinating of waste and process water treatment • implementation of appropriate procedures and techniques for the safe, effective and efficient monitoring and coordinating of waste and process water treatment • working with others to plan, prepare and conduct waste and process water treatment • provision of clear and timely instruction and supervision by the individual of those involved in waste and process water treatment • evidence of the consistent successful monitoring and coordinating of waste and process water treatment
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to plan, prepare and conduct waste and process water treatment
	  • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the waste and process water treatment

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Inspection may include:	• interaction and communication with other employees, authorities, general public • visual observation • implementation of reporting procedures, which may also include procedures for implementation of by-laws, organisational policy, statutory requirements
Process tests may include:	• gravimeteric analysis • spectrophotometric analysis • volumetric analysis • digestion techniques • ion selective electrodes • microscopy and routine jar testing • microbiology • settling tests • microscopic observation • single bugger pH • dissolved oxygen • chlorine residuals
Process data may include:	• plant performance data • environmental reports • chemical usage
Process may include:	• pre-treatment (e.g. screens, grit removal, shredding, odour control) • primary treatment (e.g. primary sedimentation) • secondary treatment (e.g. tickling filters,

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	rotating biological contractors, activated sludge and lagoon systems) • solids handling (e.g. aerobic or anaerobic digesters and sludge disposal) • disinfection (e.g. maturation ponds, chlorination, ultraviolet irradiation, osonation) • tertiary treatment (e.g. chemical nitrogen removal, biological nitrogen removal, biological phosphorus removal)
Process records may include:	• plant performance data • environmental reports • chemical usage

Unit Sector(s)

Water Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWMG501A Implement the site water management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the implementing of the site water management plan in the coal and metalliferous mining and extractive industries. It includes: preparing for development of the plan; prepare the plan; and initiating, monitoring and adjusting the implementation of the plan.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles, within:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for development of the management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the implementation of the ***site water management plans*** 1.2. Obtain, review and interpret the site ***geological***, ***hydrological and survey data*** relevant to the implementation of the plan 1.3. Access, interpret and clarify the organisation's water management systems requirements, where applicable
2. Prepare the management plan	2.1. Involve ***internal and external stakeholders*** in the planning process in a way that uses their contribution effectively and gains their support for the outcomes 2.2. Develop and document the plan in accordance with operational requirements, the water management system, geological, hydrological and survey data, and requirements and procedures 2.3. Develop an emergency response plan should any critical aspect of the mine water management system fail 2.4. Identify and acquire the ***resources*** required for the implementation of the plan 2.5. Identify and arrange any training required for personnel involved in the site water management operations 2.6. Prepare and present the site water management operations budget
3. Initiate, monitor and adjust the implementation of the management plan	3.1. Issue and explain the plan to team members and others involved, for the safe, effective and efficient implementation of the plan 3.2. Allocate roles and responsibilities and set targets and standards of achievement 3.3. Provide timely ongoing support and advise to those implementing the plan 3.4. Ensure required records and reports are maintained and issued 3.5. Monitor the site water management performance against the organisation and site requirements and the budget; resolve

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	anomalies in consultation with relevant stakeholders and issue appropriate instructions for adjustments to the plan and/or its implementation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement the site water management plan:

- apply legislative, organisation and site requirements and procedures
- interpret legislative and site requirements and procedures
- interpret and apply geological, hydrological and survey data
- provide team leadership
- apply procedures for selecting construction techniques
- apply procedures for selecting and assigning plant and equipment
- apply procedures for selecting development strategies
- apply procedures for developing, initiating and administering work plans
- interpret and apply operational performance data

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement the site water management plan:

- site risk, statutory compliance, health, safety, environmental, quality and communication requirements and procedures
- geological, hydrological and survey data
- organisation water management policy, objectives and procedures (where they exist)
- licence or environmental conditions
- site water management development options and procedures
- operational techniques required for execution of the plan
- plant and equipment capabilities
- work planning techniques
- team leadership techniques
- consultative and coaching techniques
- work monitoring methods
- recording and reporting systems
- training systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the implementing of the site water management plans • implementation of procedures and techniques for the safe, effective and efficient implementing of the site water management plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of options that best meet the required outcomes • working with others to undertake and complete the implementing of the site water management plans • consistent successful implementing of the site water management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those

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	required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the implementing of the site water management plans
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and

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	complete the implementing of the site water management plans • provision of clear and timely required support and advice on the implementing of the site water management plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Site water management plan should where applicable include:	• risk management requirements • occupational health and safety requirements • environmental requirements • specific site water balances for peak and low scenarios • water reuse and recycle opportunities • site specific water recycling processes • site water withdrawals, including; volume and source use in normal and dry weather • adequate pumping capacities to meet current and future production needs • the volume and quality of discharges • clean and contaminated flows segregation • treatment programs for contaminated flows • wastewater volume usage and quality and how and where it should be stored for treatment before discharge • the protection of groundwater sources • existing neighbour water users and respective discharges • surface water resources, including; hydrological data of rivers, streams, lakes and wetlands and present surface water quality data • the quality and potential of ground water regime, local wells and surface water sources • requirements for testing management system for discharge waters, in accordance with

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	legislative and organisation's requirements • contingency plans for flood routing of waters in the pit's operational area to cope with peak flows and in accordance with organisation's guidelines • procedures for pumping of waters from and within the site to achieve plan objectives and regulatory requirements • plans for surface drainage and total reticulation network servicing the life of pit according to engineering principles and organisation's guidelines • plans for drainage structures and roads according to engineering principles and organisation's guidelines • the staged development of civil aspects to the pits development for efficient and effective achievement of the overall development • requirements for the supervision of maintenance of the drainage scheme of the site to ensure its ongoing efficiency and effectiveness in achieving the plans objectives • site procedures for informing and instructing site personnel on all matters of drainage and reticulation required for the effective and efficient implementation of the plan • procedures for the monitoring of site drainage and wastewater treatment processes to ensure achievement of plan goals and regulatory requirements • procedures for recording the quality of site drainage effluent to meet regulatory and organisation's requirements • water treatment systems to meet specifications • procedures for the monitoring of work on hydrological effects and sensitive ecological/conservations sites • procedures for the recording and adopting of integrated measures to mitigate hydrological impact and to encourage best practice at the site
Geological data may include:	• coal, rock and overburden properties • faults and joints • groundwater • springs

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Hydrological data may include:	• rainfall • surface water, existing streams and dams • catchment areas and runoff characteristics • groundwater and bores • flood predictions
Survey data may include:	• site and neighbouring land form • site and neighbouring boundaries and structures • predicted flood levels • water pumping levels • locations of pipes, pumps
Internal and external stakeholders may include:	• site and offsite employees • contractors • equipment suppliers • geologists, surveyors and/or draughtspersons • regulatory authorities representatives • community representatives • site neighbours
Resources may include:	• financial • labour • materials • services • plant and • equipment

Unit Sector(s)

Water Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWMG601A Establish and maintain water management system

Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintaining of water management systems in the coal and metalliferous mining and extractive industries. It includes: identifying and researching the organisation needs; facilitating site environmental investigation; developing, implementing and maintaining procedures for the system; and evaluating the system.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles, within or serving:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and research organisation needs	1.1. Access, interpret and apply ***compliance documentation*** relevant to the establishment and maintenance of ***water management systems*** 1.2. Analyse organisation's goals, objectives and strategies to gain direction as to the type of ***research*** to be undertaken 1.3. Investigate and analyse license, worksite environmental conditions and legislation to develop options, strategies and anticipated outcomes 1.4. Evaluate existing system and equipment suitability, taking into account operational requirements, safety and health issues and environmental legislation/ regulations 1.5. Research, evaluate, select and purchase new systems in line with operational and budget requirements, safety and health and environmental legislation/regulations 1.6. Analyse and interpret research information to establish options and opportunities
2. Facilitate site environmental investigation	2.1. Ensure internal and external ***stakeholders*** are involved in the planning process in a way that uses their contribution effectively and gains their support for the outcomes. 2.2. Establish strategies and systems to support analysis of the worksite environments 2.3. Ensure worksite environments are investigated to identify and assess the factors, which impact on work development 2.4. Ensure market opportunities are identified and explored to assist the organisation to forecast trends and options 2.5. Ensure water ***quantity*** and quality requirements and excesses are determined 2.6. Ensure threats and opportunities are identified, analysed and used to optimise project outcomes 2.7. Ensure titles searches are undertaken 2.8. Ensure legal obligations are identified and documented

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3. Develop, implement and maintain procedures for the system	3.1. Ensure contingency plans for flood routing of water in operational area to cover peak flows are developed and implemented 3.2. Ensure ***site plans*** for ***surface drainage and total reticulation network*** are developed and implemented to service the life of the mine according to ***engineering principles*** 3.3. Ensure procedures for ***pumping waters*** from the mine are developed and meet licence conditions. 3.4. Ensure procedures for work are developed for drainage and road geometry in accordance with engineering principles and to minimise environmental impacts 3.5. Ensure staged development of civil aspects to the worksite are planned and interpret 3.6. Ensure water treatment systems are designed to specification to meet requirement of the water management system 3.7. Ensure procedures for ***maintenance work for the drainage scheme*** of the worksites are developed and implemented 3.8. Identify, clarify and communicate roles and responsibilities to implement mine water management system 3.9. Develop and implement information and training systems to support water management to ensure the implementation and application of the system 3.10. Prepare an emergency response plan for failure or critical aspects of mine water management system
4. Evaluate the system	4.1. Identify and agree on performance indicators and criteria for the evaluation of statutory compliance and effectiveness of the water management system 4.2. Ensure site drainage, reticulation and wastewater treatment is monitored against agreed indicators 4.3. Ensure quality of site drainage effluent is monitored, recorded and reported to meet environmental and organisation requirements 4.4. Ensure hydrological effects and sensitive

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	ecological/ conservation sites are monitored 4.5. Ensure instances of non-compliance with ***regulatory requirements*** are responded to in accordance with state/local government requirements and organisation's requirements

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain water management system:

- apply legislative, organisation and site requirements and procedures
- access and use appropriate information management technologies
- read and interpret survey plans
- interpret geological and hydrological data
- apply procedures to analyse and review water management systems
- apply auditing procedures
- apply resource plan develop procedures
- apply techniques to evaluate new and used equipment
- apply processes required to gain statutory/legal approvals
- apply procedures to implement change
- apply people and processes management techniques
- apply projects and tasks management procedures
- apply techniques for negotiation with internal/external customers, community and statutory/legal authorities
- prepare and present management reports
- prepare operating budgets
- prepare tender specifications
- apply conflict resolve techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain water management system:

- drainage systems
- emergency response and disaster planning procedures
- environmental requirements and management
- financial management
- mine design relating to mine water management systems
- mine operating procedures , including those applying to mine water management
- mine plant and equipment
- mine water management systems
- organisational objectives

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- resource monitoring
- risk management; principles, strategies and applications
- safety and health requirements and management
- safety features for water management systems
- statutory control requirements
- team management
- training and assessment systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing and maintenance of water management systems • implementation of procedures and techniques for the safe, effective and efficient establishing and maintenance of water management systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of options that best meet the required outcomes • working with others to undertake and complete the establishing and maintenance of water management systems • consistent and timely establishing and maintenance of water management systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the establishing and maintenance of water management systems
	  • consistent and timely gaining of approval of water management systems

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	• provision of clear, timely required support and advice on the implementation of water management systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Water management system includes:	• all actions to obtain, introduce and distribute the water required for operations (both potable and process water). It also includes the treatment of water and the disposal of excess, unwanted and/or wastewater from the site
Water management system parameters may include:	• objectives • system boundaries • hazard and consequence types • methods • team processes • timings • venue/locations • consultation processes
Water management systems and measures may include those focused on:	• organisational goals, objectives and strategies • resources • internal and external stakeholders • environmental factors
Research may include:	• geological • climate • hydrology • topography • environmental factor • cultural and biological environments • monitoring water/equipment for leaching • water runoff monitoring for contaminants • establishing bore fields

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	• knowledge of local rainfall • measuring of water usage • cost of water • water treatment requirements • predictions on water quantity, quality • water wastage
Stakeholders may include:	• regulatory authorities • tenderers • operating managers • project managers • contractors • employees • scientists • community • suppliers • customers
Quality may include:	• total dissolved solids • turbidity • heavy metals • organics • salinity • acidity/alkalinity • suspended solids • hydrocarbons • temperature
Site plans may include:	• mine development plans • layout of water reticulation system • amenities • culverts and drains • topography • controls • reservoirs and dam sites • treatment ponds • pumping stations
Surface drainage and total reticulation network may include:	• storage areas • table drains • culverts • channels • pipe works • trenches • manhole and gully pits

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	• pumps
Engineering principles may include:	• water flow • reticulation techniques • drain design principles and standards • rural road design principles and standards • earthwork activities
Waters pumping may be from:	• settlement ponds • holding or tailing dams • sump sites
Maintenance work for the drainage scheme may include:	• pit works • roadways • administration areas • boundary conditions
Regulatory requirements may include:	• boundaries, leases, tenements and licence conditions • contamination precautions • emergency response • council • environmental - noise/air/water and conditions of licence • mine safety and health • rehabilitation • wildlife corridors
Regulatory bodies may include:	• mineral resources or appropriate body • safety and health authority • environmental authority/EPA • local government • harbours and marine • port authority • tenement authority • company policy and procedures

Unit Sector(s)

Water Management

Competency field

Refer to Unit Sector(s).

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Co-requisite units

Not applicable.

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AHCNAR201A Carry out natural area restoration works

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers the process of carrying out natural area restoration work and defines the standard required to: establish the task and site with supervisor by referring to a revegetation plan; carry out weed removal and ground preparation as part of a team; transport tools, plants and planting materials to the site; carry out planting and regeneration techniques and protect the restored area; remove any waste.

Application of the Unit

Application of the unit	This unit applies to supervised workers in land management programs who carry out natural area restoration work as part of a team and work under routine supervision with intermittent checking. The work is usually within established routines, methods and procedures.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not Applicable

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA

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ELEMENT	PERFORMANCE CRITERIA
1. Prepare for natural area restoration works	1.1. Services are located using site and natural area restoration plans and in consultation with the supervisor. 1.2. Occupational Health and Safety (OHS) hazards are identified and safety concerns reported to the supervisor. 1.3. The environmental implications of natural area restoration works are identified and the likely outcomes assessed and reported to the supervisor. 1.4. Natural area restoration tools, equipment and machinery are selected and prepared for use according to enterprise work procedures and native plant species to be established. 1.5. Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures. 1.6. Personal Protective Equipment (PPE) is used and maintained according to procedures.
2. Apply weed control measures	2.1. Species and quantities of weeds requiring control are identified according to enterprise work procedures. 2.2. Herbicides are prepared, where necessary, according to manufacturer's specifications and enterprise work procedures. 2.3. Weed control measures are undertaken according to the weed and non-target species physiological characteristics, and enterprise work procedures. 2.4. Work practices and control measures employed cause damage only to the target weed species.
3. Prepare the soil for natural area restoration	3.1. Soil treatments are selected according to the soil condition, species requirements and enterprise work procedures. 3.2. Intact natural soil profiles are protected from damage. 3.3. Soil treatments are applied either broadly or at specific restoration sites according to enterprise work procedures.
4. Replace native vegetation on the natural area restoration site	4.1. Vegetation replacement methods are determined and assisted natural regeneration, planting, seeding or transplanting treatments are prepared according to the restoration plan and enterprise work procedures. 4.2. Assisted regeneration treatments are applied to

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ELEMENT	PERFORMANCE CRITERIA
	remnant vegetation and intact soil profiles where required according to enterprise work procedures. 4.3. Seed (and fertiliser if required) is sown either by hand in discrete areas or broadly using sowing and/or ripping trailed machinery. 4.4. Containerised plants or transplants are positioned according to the restoration plan and planted firmly ensuring good contact between roots and surrounding soil according to enterprise work procedures. 4.5. Hand watering or irrigation, where specified, is undertaken to establish newly sown or planted vegetation. 4.6. The natural area restoration works are undertaken according to OHS requirements.
5. Complete natural area restoration work	5.1. Plant guards and/or fencing are installed and maintained according to the natural area restoration plan and enterprise work procedures. 5.2. Multiple follow up weed control treatments are undertaken, as necessary, according to enterprise work procedures. 5.3. Waste material is removed from the natural area restoration site and disposed of in an environmentally aware and safe manner according to enterprise work procedures. 5.4. Tools, equipment and machinery are cleaned, maintained and stored according to enterprise work procedures. 5.5. A clean and safe area is maintained throughout and upon completion of work according to enterprise work procedures. 5.6. Work outcomes are recorded or reported to the supervisor according to enterprise work procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

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REQUIRED SKILLS AND KNOWLEDGE
• participate in teams and contribute to team objectives • read written instructions, understand and interpret work procedures • calibrate tools, equipment and machinery, measure distance, calculate area, planting and seeding rates, volumes and treatment application rates • minimise noise, dust, high activity vehicle traffic and water run-off to prevent nuisance-level environmental disturbance • use oral communication skills/language competence to fulfil the job role as specified by the organisation including questioning, active listening, asking for clarification and seeking advice from supervisor • use numeracy skills to estimate, calculate and record routine workplace measures • use interpersonal skills to relate to people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities.
Required knowledge
• common names of native plants • common names of native animals • common names of weeds and pest animals • the importance and value of the local provenance species • natural area restoration techniques • basic plant and animal ecology • map and plan reading • OHS and environmental legislative and enterprise requirements.

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following: • establish the task and site with supervisor by referring to a revegetation plan • carry out weed removal and ground preparation as part of a team • transport tools, plants and planting materials to the site • carry out planting and regeneration techniques • protect the restored area and remove any waste.
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole.	
Natural area restoration works may include:	• soil stabilisation • weed suppression and control • planting of terrestrial and aquatic plant species as containerised or bare rooted plants • direct seeding of native species by hand or machine • protection and maintenance of remnant vegetation • encouragement of natural regeneration.

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Unit Sector(s)

Unit sector	Natural area restoration

Co-requisite units

Co-requisite units		

Competency field

Competency field	

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AHCNAR303A Implement revegetation works

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers the process of implementing revegetation works and defines the standard required to: prepare the site for revegetation works; conduct a site hazard identification and risk control assessment; recognise and treat plant diseases on a revegetation site; treat weeds and competing plants; carry out revegetation works; and clean and maintain the revegetated site.

Application of the Unit

Application of the unit	This unit applies to workers re-establishing vegetation in natural restoration areas.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not Applicable

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA

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ELEMENT	PERFORMANCE CRITERIA
1. Prepare equipment and materials	1.1. Tools and materials are selected for the task to be undertaken according to manufacturer guidelines and Occupational Health and Safety (OHS) regulations. 1.2. Plant materials are identified, obtained and stored according to enterprise guidelines. 1.3. Labour and machinery requirements are estimated and organised. 1.4. Schedule of works is prepared and provided to management/client.
2. Prepare the revegetation site	2.1. Site hazards are identified, risks assessed and suitable risk controls implemented. 2.2. Site preparation is undertaken according to planting plan and/or supervisor's instructions. 2.3. Soil ameliorants are used, if necessary, according to plan specifications. 2.4. Revegetation site is marked out according to supervisor's directions and/or plans. 2.5. All competing plants, debris and pollutants are treated according to the plan specifications and risk controls implemented. 2.6. Treatments are selected according to the risk controls selected and applied according to documented guidelines and manufacturer instructions. 2.7. Protective structures are installed where indicated by the risk controls implemented.
3. Effect revegetation works	3.1. Revegetation works are implemented according to enterprise guidelines. 3.2. All plants materials are inspected prior to revegetation works and defective materials are discarded. 3.3. Plant materials to be installed are treated according to documented guidelines. 3.4. Plant materials are installed according to planting program. 3.5. Remedial action is undertaken to ensure all of the revegetation program requirements have been implemented. 3.6. Potential threats to revegetation works are identified and reported.
4. Maintain revegetated site	4.1. Site is maintained according to the planting program requirements.

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ELEMENT	PERFORMANCE CRITERIA
	4.2. Remedial action and plant protection is undertaken according to the needs of the species. 4.3. Tools and equipment are cleaned, maintained and stored consistent with manufacturer specifications.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• prepare equipment and materials • prepare a planting site • effect revegetation works • maintain revegetated site • use literacy skills to read, interpret and follow organisational policies and procedures, follow sequenced written instructions, record information collected accurately and legibly, and select and apply procedures for a range of tasks • use oral communication skills/language competence to fulfil the job role as specified by the organisation, including questioning techniques, active listening, clarifying information and consulting with supervisors as required • use numeracy skills to estimate, calculate and record routine workplace measures • use interpersonal skills to work with and relate to people from a range of cultural, social and religious backgrounds and with a range of physical and mental abilities.
Required knowledge
• revegetation techniques • ecosystems, provenance and habitat requirements • factors affecting the timing and method of planting • identification of pests and diseases of trees • principles and methods relating to the prevention and control of pests and diseases • safety requirements when handling and using hazardous goods • nutrient requirements of a range of plant species and cultivars • physiology of plant growth • techniques for protecting and securing/anchoring trees and shrubs • plant selection and culture • soils and nutrients • calculations for materials.

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following: • prepare the site for revegetation works • conduct a site hazard identification and risk control assessment • recognise and treat plant diseases on a revegetation site • treat weeds and competing plants • carry out revegetation works • clean and maintain the revegetated site.
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole.	

The types of establishment methods may include:	• a range of establishment methods covering:
	  • hand planting
	  • mechanical planting
	  • direct seeding
	  • encouragement of natural regeneration
	  • mechanical sowing
	  • fire.

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RANGE STATEMENT	
Earthworks may include:	• irrigation • drainage • ripping • cultivating • clearing debris.

Unit Sector(s)

Unit sector	Natural area restoration

Co-requisite units

Co-requisite units		

Competency field

Competency field	

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AHCSAW201A Conduct erosion and sediment control activities

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers the process of carrying out erosion and sediment control activities in both urban and rural environments and defines the standard required to: assess risks from erosion and sediment at a site; assemble structures to prevent erosion and control sediment at a site; carry out sediment control activities in accordance with legislation and stakeholder requirements; confirm that erosion and sediment control meets enterprise requirements.

Application of the Unit

Application of the unit	This unit applies to workers at an operational level involved in earthworks construction and other land forming activities working under routine supervision with intermittent checking by supervisors.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not Applicable

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA

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ELEMENT	PERFORMANCE CRITERIA
1. Align work site practices with erosion and sediment control principles	1.1. Erosion and sedimentation legislation is adhered to at the work site as a part of contract works. 1.2. Procedures relating to erosion and sediment control are applied on the work site to align with industry standards.
2. Implement erosion and sediment control principles in the workplace	2.1. Breaches of erosion and sediment control legislation are noted and reported. 2.2. Industry practices for erosion and sediment control are applied in the work place.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- identify hazards and follow safe operating procedures
- identify erosion and sediment control structures/measures/practices
- carry out routine work with control measures and structures
- identify areas at risk of erosion
- undertake activities in accordance with legislation/community expectation and project specifications
- use literacy skills to follow sequenced written instructions and record information accurately and legibly
- use oral communication skills/language competence to fulfil the job role as specified by the organisation including questioning, active listening, asking for clarification and seeking advice from supervisor
- use numeracy skills to estimate, calculate and record routine workplace measures
- use interpersonal skills to relate to people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities.

Required knowledge

- cost to the community of erosion and sedimentation
- loss of habitat
- water quality
- loss of production/asset/amenity
- re-occurring maintenance/repair/monitoring
- agents/processes of erosion and sedimentation

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REQUIRED SKILLS AND KNOWLEDGE
• types of erosion and sediment control structures and techniques for constructing them • basic catchments issues • role of vegetation • characteristics of soils with an emphasis on erodible soils. • OHS and environmental legislative and enterprise procedures.

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following: • assess risks from erosion and sediment at a site • assemble structures to prevent erosion and control sediment at a site • carry out sediment control activities in accordance with legislation and stakeholder requirements • confirm that erosion and sediment control meets enterprise requirements.
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole.	
Control activities may include:	• grade stabilising structures • outlet protection structures • storm water detention measures • dust control • revegetation for the purpose of controlling erosion.

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Unit Sector(s)

Unit sector	Soil and water conservation

Co-requisite units

Co-requisite units		

Competency field

Competency field	

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AHCSAW301A Construct conservation earthworks

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers the construction of conservation earthworks and defines the standard required to: determine job requirements from plans and specifications; assess machinery and equipment requirements; construct planned earthworks; apply final finishing techniques.

Application of the Unit

Application of the unit	This unit applies to workers who use specialised earthmoving techniques completed to fine tolerances. Construction is often carried out using a single earthmoving machine in varied conditions and terrains that requires the plant operator to develop skills that are unique to this sector. The use and operation of machinery and equipment used to construct these works is covered by separate units.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not Applicable

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA

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ELEMENT	PERFORMANCE CRITERIA
1. Prepare for construction	1.1. Confirm construction details and sequence. 1.2. Identify and locate worksite, site indicators and survey pegs. 1.3. Confirm work readiness of machinery and equipment. 1.4. Assess and minimise risks to others and the environment. 1.5. Select and use appropriate personal protective equipment. 1.6. Verify that equipment and attachments match terrain and program tasks.
2. Carry out work	2.1. Follow industry endorsed earthwork methods and patterns for specific machines. 2.2. Monitor and maintain optimum machinery loads in accordance with prevailing conditions. 2.3. Ensure that safe machinery operating techniques are deployed to match terrain, site conditions other operators and workers. 2.4. Ensure that excavation, transport, dumping and compaction of material is conducted in accordance with industry practice.
3. Apply finish techniques	3.1. Finish batters and surfaces in accordance with job requirements and industry practice. 3.2. Retain site features and vegetation in accordance with work plan/schedule. 3.3. Clear site and remove debris in accordance with work plan/schedule. 3.4. Complete topsoiling of disturbed areas and surfaces in accordance with industry standards and plan/schedule.
4. Finalise work	4.1. Complete work records. 4.2. Clean and store Personal Protective Equipment (PPE) and application equipment in accordance with manufacturer's specification and Occupational Health and Safety (OHS) requirements.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- identify hazards and implement safe operating procedures
- prepare for construction
- carry out planned earthworks and minimise damage to natural areas
- apply finishing techniques
- use literacy skills to read, interpret and follow organisational policies and procedures, follow sequenced written instructions, record accurately and legible information collected and select and apply procedures for a range of tasks
- use oral communication skills/language competence to fulfil the job role as specified by the organisation, including questioning techniques, active listening, clarifying information and consulting with supervisors as required
- use numeracy skills to estimate, calculate and record routine workplace measures
- use interpersonal skills to work with and relate to people from a range of cultural, social and religious backgrounds and with a range of physical and mental abilities.

Required knowledge

- erosion and sediment control standards and principles
- erosion control and design principles
- natural area protection (particularly topsoil) and rehabilitation principles
- soils and soil formation
- principles of conservation earthwork construction including catchment management and soils
- earthmoving principles
- levels and levelling
- natural area protection (including topsoil) and rehabilitation
- types and application of personal protective equipment
- legislation and regulations including Occupational Health and Safety (OHS) in relation to conservation earthwork construction
- risk factors including human health, environmental damage
- erosion and sedimentation control principles and practices
- environmental impacts and controls for constructing conservation earthworks
- OHS and environmental legislative and enterprise requirements.

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following: • determine job requirements from plans and specifications • assess machinery and equipment requirements • construct planned earthworks • apply final finishing techniques.
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole.	

Earthworks may include:	• the range of conservation earthworks on rural lands including:
	  • contour banks
	  • waterways
	  • dams
	  • drainage structures
	• This unit does not include construction of access tracks or seismic lines, maintenance of fire breaks or land clearing.

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Unit Sector(s)

Unit sector	Soil and water conservation

Co-requisite units

Co-requisite units		

Competency field

Competency field	

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BSBCMN311B Maintain workplace safety

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit is concerned with OHS responsibilities of employees with supervisory responsibilities to implement and monitor the organisation's Occupational Health and Safety policies, procedures and programs in a small team to meet legislative requirements. This unit has been adapted from Generic Competency B in the National Guidelines for Integrating Occupational Health and Safety Competencies into National Industry Competency Standards [NOHSC:7025 (1998) 2nd edition].

Application of the Unit

Application of the unit	Frontline managers have a key role in maintaining workplace safety within the context of the organisation. In their role, they closely monitor aspects of work associated with the safe delivery of products and services, meaning that they have an important responsibility in influencing the ongoing safety within the workplace. At this level, work will normally be carried out within known routines, methods and procedures, and may also involve a number of complex or non routine activities that require some discretion and judgement.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assist incorporation of Occupational Health and Safety policy and procedures into the work team	1.1. Demonstrate basic requirements of ***Occupational Health and Safety legislation*** in area of responsibility appropriate for health and safety needs of a small work team 1.2. Provide information and clearly explain to the work group the ***organisation's Occupational Health and Safety policies***, ***procedures and programs*** 1.3. Regularly provide information and clearly explain to the work group information about ***identifying hazards*** and the outcomes of ***risk assessment***
2. Support participative arrangements for the management of Occupational Health and Safety	2.1. Implement and monitor ***organisational consultative procedures*** to facilitate participation of work group in management of work area hazards 2.2. Promptly dealt with issues raised through consultation in accordance with organisational procedures for issue resolution 2.3. Encourage and assist team members to contribute to the management of Occupational Health and Safety at the workplace 2.4. Engage with individuals and teams to identify and implement improvements in the management of Occupational Health and Safety Feedback
3. Support the organisation's procedures for providing Occupational Health and Safety training	3.1. Provide advice on Occupational Health and Safety ***training needs*** of individuals and workgroup 3.2. Provide advice on strategies and opportunities for development of workgroup's competencies in relation to Occupational Health and Safety 3.3. Provide ***coaching and mentoring assistance*** to team members to support the effective development of individual and group competencies in Occupational Health and Safety
4. Participate in identifying hazards and assessing and controlling risks for the work area	4.1. Provide advice on ***hazards in work area*** in line with organisation's Occupational Health and Safety policies and procedures 4.2. Support the implementation of ***procedures to control risks*** using the hierarchy of controls and in accordance with organisational procedures 4.3. Identify and reported inadequacies in existing risk control measures are in accordance with the hierarchy of controls 4.4. Accurately complete and maintain Occupational

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ELEMENT	PERFORMANCE CRITERIA
	Health and Safety records of incidents in the work area are in accordance with Occupational Health and Safety legal requirements

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- literacy skills to understand workplace procedures and work instructions for identifying and reporting hazards and interpreting Occupational Health and Safety signs and symbols
- analytical skills to identify hazards and assess risks in the work area
- data analysis skills including:
  - incident (accident) monitoring
  - environmental monitoring
  - evaluation of effectiveness of risk control measures
- assessment skills to assess resources required to apply risk control measures
- technology skills including the ability to operate and shut down equipment
- coaching and mentoring skills to provide support to colleagues
  - Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities.

Required knowledge

- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- hazards and associated risks which exist in the workplace
- organisation policies and procedures relating to hazard management, fire, emergency, evacuation, incident (accident) investigating and reporting
- Occupational Health and Safety management to other organisational systems and procedures
- characteristics and composition of the workgroup.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • organisational management systems and procedures to Occupational Health and Safety within work group area • Occupational Health and Safety legal and organisational requirements • procedures for identifying hazards in the work area • procedures for assessing and controlling risks to health&safety associated with those hazards, in accordance with the hierarchy of control • specific, clear and accurate information and advice on workplace hazards to work group • appropriate supervision of work group.

Context of and specific resources for assessment	Assessment must ensure:
	• access to safety processes, hazards and risk which are relevant to the area of work
	• access to relevant information and documentation on compliance requirements such as:
	  • organisational policies, standard operating procedures, procedures and plans
	  • relevant legislation, regulations, licensing requirements, codes of practice, standards
	• access to relevant internal and external data files
	• access to appropriate office equipment and resources used in the identification and rectification of OHS compliance breaches.

Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party reports of on-the-job performance by the candidate • review of documents on workplace OHS legislation, codes, standards, policies and procedures relevant

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EVIDENCE GUIDE	
	developed and communicated to employees • analysis of responses to case studies and scenarios • demonstration of the application of OHS legislation in conducting work safely • oral or written questioning to assess knowledge of research and data collection methods to obtain evidence of compliance with OHS legislation • assessment of duty of care arrangements.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Occupational Health and Safety legislation may include:	• legislation relevant to the workplace, occupation and industry, for example, mining safety, electrical legislation
	• relevant commonwealth and state/territory OHS specific acts and regulations such as:
	  • common law
	  • contract law
	  • criminal law
	  • dangerous goods
	  • environmental protection
	  • equal opportunity and anti-discrimination law
	  • industrial relations law
	  • privacy
	• workers compensation

Organisation's Occupational Health and Safety policies procedures and programs may include:	• procedures for hazard identification • procedures for risk assessment, selection and implementation of risk control measures • incident (accident) investigation • OHS audits and safety inspections • consultative arrangements for employees in work area • hazard reporting procedures • safe operating procedures/instructions • use & care of personal protective equipment • emergency & evacuation procedures • purchasing policy & procedures • plant & equipment maintenance & use • hazardous substances use and storage • dangerous goods transport & storage • OHS arrangements for on site contractors, visitors and members of public • first aid provision/medical practitioner contact

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RANGE STATEMENT	
	& attention • site access
Identifying hazards and outcomes of ***risk assessment*** may occur through activities such as:	• workplace inspections in area of responsibility • consulting work team members • housekeeping • checking equipment before and during work • review of records, eg injury, hazardous substances including labels and Materials Safety Data Sheet register, dangerous goods storage list, training, plan and equipment maintenance, etc
Training needs relating to Occupational Health and Safety may include:	• coaching, mentoring and/or supervision • formal/informal learning programs • internal/external training provision • personal study
Organisational consultative procedures may include:	• formal and informal meetings • health and safety committees • attendance of health and safety representatives at management meetings • other committees, for example, planning and purchasing • early response to employee suggestions, requests, reports and concerns put forward to management • counselling/disciplinary processes
Coaching and mentoring assistance may include:	• explaining/clarifying • respecting the contribution of all participants and giving credit for achievements • presenting and promoting a safe workplace • problem solving • providing encouragement • providing feedback to another team member
Hazards in work area may include:	• blocked exits • slippery and uneven floors • untidy and or noisy work areas • lack of adequate storage • reliance on low order control measure (eg PPE) to reduce worker risk exposure instead of controlling the hazard itself • unguarded /poorly maintained machinery and equipment

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RANGE STATEMENT	
	• unlabelled chemicals and substances • ergonomically unsuitable work stations and task design, eg. repetitive work, poor lighting/ glarey surfaces, non-adjustable work surfaces & seating • internal/external threat of occupational violence and bullying

Procedures to control risks may include actions such as:	• application of the hierarch of control, namely:
	• eliminate the risk
	• reduce/minimise the risk through:
	  • engineering controls
	  • administrative controls
	  • personal protective equipment
	• regular consultation with workers

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Frontline Management

Co-requisite units

Co-requisite units		

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BSBCUS301B Deliver and monitor a service to customers

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Training Package version 6.0* Revised unit. Performance criteria amended so that the learner is not required to 'incorporate evidence of customer satisfaction in decision to modify products or services'. Required skills updated to focus on learning and development practices and compliance with policy and procedures. Replaces BSBCUS301A Deliver and monitor a service to customers

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to identify customer needs and monitor service provided to customers. Operators may exercise discretion and judgement using appropriate theoretical knowledge of customer service to provide technical advice and support to customers over either a short or long term interaction.

Application of the Unit

This unit applies to individuals who are skilled operators and apply a broad range of competencies in various work contexts.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Identify customer needs	1.1 Use ***appropriate interpersonal skills*** to accurately identify and clarify ***customer needs and expectations*** 1.2 Assess customer needs for urgency to determine priorities for service delivery according to ***organisational requirements*** 1.3 Use ***effective communication*** to inform customers about available choices for meeting their needs and assist in the selection of preferred options 1.4 Identify limitations in addressing customer needs and seek appropriate assistance from ***designated individuals***
2. Deliver a service to customers	2.1 Provide prompt service to customers to meet identified needs in accordance with organisational requirements 2.2 Establish and maintain appropriate rapport with customers to ensure completion of quality service delivery 2.3 Sensitively and courteously handle ***customer complaints*** in accordance with organisational requirements 2.4 Provide assistance or respond to customers with ***specific needs*** according to organisational requirements 2.5 Identify and use available ***opportunities*** to promote and enhance services and products to customers
3. Monitor and report on service delivery	3.1 Regularly review customer satisfaction with service delivery using ***verifiable evidence*** according to organisational requirements 3.2 Identify opportunities to enhance the quality of service and products, and pursue within organisational requirements 3.3 Monitor procedural aspects of service delivery for effectiveness and suitability to customer requirements 3.4 Regularly seek customer feedback and use to improve the provision of products and services 3.5 Ensure reports are clear, detailed and contain recommendations focused on critical aspects of service delivery

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to identify trends and positions of products and services
- communication skills to monitor and advise on customer service strategies
- literacy skills to:
  - edit and proofread texts to ensure clarity of meaning and accuracy of grammar and punctuation
  - prepare general information and papers according to target audience
  - read and understand a variety of texts
- problem-solving skills to deal with customer enquiries or complaints
- technology skills to select and use technology appropriate to a task
- self-management skills to:
  - comply with policies and procedures
  - consistently evaluate and monitor own performance
  - seek learning opportunities.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - financial legislation
  - occupational health and safety (OHS)
- organisational policy and procedures for customer service including handling customer complaints
- service standards and best practice models
- public relations and product promotion
- techniques for dealing with customers, including customers with specific needs.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • identifying needs and priorities of customers • distinguishing between different levels of customer satisfaction • treating customers with courtesy and respect • responding to and reporting on, customer feedback • knowledge of organisational policy and procedures for customer service.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of customer complaints • examples of documents relating to customer service standards and policies.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of reports on customer service delivery • analysis of responses to case studies and scenarios • demonstration of techniques • oral or written questioning to assess knowledge of customer service strategies.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Appropriate interpersonal skills may include:	• listening actively to what the customer is communicating • providing an opportunity for the customer to confirm their request • questioning to clarify and confirm customer needs • seeking feedback from the customer to confirm understanding of needs • summarising and paraphrasing to check understanding of customer message • using appropriate body language.
Customers may include:	• corporate customers • individual members of the organisation • individual members of the public • internal or external • other agencies.
Customer needs and expectations may include:	• accuracy of information • advice or general information • complaints • fairness/politeness • further information • making an appointment • prices/value • purchasing organisation's products and services • returning organisation's products and services • specific information.
Organisational requirements may include:	• access and equity principles and practice • anti-discrimination and related policy • defined resource parameters • goals, objectives, plans, systems and processes • legal and organisational policies, guidelines and requirements • OHS policies, procedures and programs • payment and delivery options • pricing and discount policies • quality and continuous improvement processes and

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	standards • quality assurance and/or procedures manuals • replacement and refund policy and procedures • who is responsible for products or services.
Effective communication may include:	• giving customers full attention • maintaining eye contact, except where eye contact may be culturally inappropriate • speaking clearly and concisely • using active listening techniques • using appropriate language and tone of voice • using clear written information/communication • using non-verbal communication e.g. body language, personal presentation (for face-to-face interactions) • using open and/or closed questions.
Designated individuals may include:	• colleagues • customers • line management • supervisor.
Customer complaints may include:	• administrative errors such as incorrect invoices or prices • customer satisfaction with service quality • damaged goods or goods not delivered • delivery errors • product not delivered on time • service errors • warehouse or store room errors such as incorrect product delivered.
Specific needs of customers may relate to:	• age • beliefs/values • culture • disability • gender • language • religious/spiritual observances.
Opportunities to promote and enhance services and products may include:	• extending time lines • packaging procedures • procedures for delivery of goods • returns policy • system for recording complaints • updating customer service charter.
Verifiable evidence may include:	• customer satisfaction questionnaires • audit documentation and reports

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	• quality assurance data • returned goods • lapsed customers • service calls • complaints.

Unit Sector(s)

Stakeholder Relations – Customer Service

Custom Content Section

Not applicable.

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BSBCUS401B Coordinate implementation of customer service strategies

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Training Package version 6.0.* Revised unit. Performance criteria amended so that the learner is not required to 'incorporate evidence of customer satisfaction in decision to modify products or services'. Required skills updated to focus on learning and development practices and compliance with policy and procedures. Replaces BSBCUS401A Coordinate implementation of customer service strategies

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to advise on, carry out and evaluate customer service strategies, including the design of improvement strategies based on feedback. Operators may have responsibility to provide guidance or to delegate aspects of these tasks to others.

Application of the Unit

This unit applies to individuals with a broad knowledge of customer service strategies who contribute well developed skills in addressing customer needs and problems.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	**Performance Criteria**
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Advise on customer service needs	1.1 Clarify and accurately assess ***customer needs*** using appropriate ***communication techniques*** 1.2 Diagnose problems matching service delivery to ***customers*** and develop options for improved service within ***organisational requirements*** 1.3 Provide relevant and constructive advice to promote the improvement of customer service delivery 1.4 Use ***business technology*** and/or ***online services*** to structure and present information on customer service needs
2. Support implementation of customer service strategies	2.1 Ensure customer service strategies and opportunities are promoted to ***designated individuals and groups*** 2.2 Identify and allocate available budget resources to fulfil customer service objectives 2.3 Promptly action ***procedures to resolve customer difficulties*** and ***complaints*** within organisational requirements 2.4 Ensure that decisions to implement ***strategies*** are taken in consultation with designated individuals and groups
3. Evaluate and report on customer service	3.1 Review client satisfaction with service delivery using verifiable data in accordance with organisational requirements 3.2 Identify and report changes necessary to maintain service standards to designated individuals and groups 3.3 Prepare conclusions and recommendations from verifiable evidence and provide constructive advice on future directions of client service strategies 3.4 Maintain systems, records and reporting procedures to compare changes in customer satisfaction

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to
  - communicate effectively with personnel and clients at all levels
  - articulate customer service strategies
- interpersonal skills to:
  - build relationships with customers
  - establish rapport
- literacy skills to:
  - prepare general information and papers
  - read a variety of texts
  - write formal and informal letters according to target audience
- planning skills to develop implementation schedules
- problem-solving skills to diagnose organisational problems relating to customer services
- self-management skills to:
  - comply with policies and procedures
  - consistently evaluate and monitor own performance
  - seek learning opportunities.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - environmental issues
  - occupational health and safety (OHS)
- principles of customer service
- organisational business structure, products and services
- product and service standards and best practice models.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • identifying needs and priorities of the organisation in delivering services to customers • responding to and reporting on customer feedback • designing strategies to improve delivery of products and services • knowledge of the principles of customer service.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of customer complaints, feedback and strategies.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of documentation reporting changes necessary to maintain service standards • analysis of responses to case studies and scenarios • demonstration of techniques • observation of presentations • oral or written questioning to assess knowledge of customer service techniques and strategies • review of systems, records and reporting procedures to compare changes in customer satisfaction.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Customer needs may relate to:	• accuracy of information • advice or general information • complaints • fairness/politeness • further information • making an appointment • prices/value • purchasing organisation's products and services • returning organisation's products and services • specific information.
Communication techniques may include:	• analysing customer satisfaction surveys • analysing quality assurance data • conducting interviews • consultation methods, techniques and protocols • making recommendations • obtaining management decisions • questioning • seeking feedback to confirm understanding • summarising and paraphrasing.
Customers may include:	• corporate customers • individual members of the organisation • individual members of the public • internal or external • other agencies.
Organisational requirements may include:	• access and equity principles and practice • anti-discrimination and related policy • confidentiality and security requirements • defined resource parameters • ethical standards • goals, objectives, plans, systems and processes • legal and organisational policies, guidelines and requirements • OHS policies, procedures and programs • payment and delivery options

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	• pricing and discount policies • quality and continuous improvement processes and standards • quality assurance and/or procedures manuals • replacement and refund policy and procedures • who is responsible for products or services.
Business technology may include:	• answering machine • binder • computer • fax machine • photocopier • printer • shredder • telephone.
Online services may include:	• access to product database by customers online • access to purchase, delivery and account records • contact centre • online ordering • online payments • online registration • quick/reasonable response • two-way communication online.
Designated individuals and groups may include:	• colleagues • committee • customers • external organisation • line management • supervisor.
Procedures to resolve customer difficulties may include:	• external agencies (e.g. Ombudsman) • item replacement • referrals to supervisor • refund of monies • review of products or services • using conflict management techniques.

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Customer complaints may include:	• administrative errors such as incorrect invoices or prices
	• customer satisfaction with service quality
	• damaged goods or goods not delivered
	• delivery errors
	• products not delivered on time
	• service errors
	• specific e-business problems and issues:
	  • difficulty accessing services
	  • inactive links
	  • not appreciating differing hardware and software
	  • services not available
	  • supply errors such as incorrect product delivered
	  • time taken to access services
	  • unfriendly website design
	  • website faults
	• warehouse or store room errors such as incorrect product delivered.

Customer service ***strategies*** may include:	• courtesy/politeness • delivery times • merchandise characteristics • price offers • product/refund guarantees • product/service availability.

Unit Sector(s)

Stakeholder Relations – Customer Service

Custom Content Section

Not applicable.

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BSBCUS501A Manage quality customer service

Modification History

Not Applicable

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to develop strategies to manage organisational systems that ensure products and services are delivered and maintained to standards agreed by the organisation.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Many managers are involved in ensuring that products and services are delivered and maintained to standards agreed by the organisation. Typically these managers have staff involved in delivering customer service and are responsible for the quality of their work. In many instances the work will occur within the organisation's policies and procedures framework
At this level, the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies, will be required.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan to meet internal and external customer requirements	1.1. Investigate, identify, assess, and include the needs of ***customers*** in planning processes 1.2. Ensure plans achieve the ***quality***, time and cost specifications agreed with customers
2. Ensure delivery of quality products and/or services	2.1. Deliver products and/or services to customer specifications within organisation's business plan 2.2. Manage team performance to consistently meet the organisation's quality and delivery standards 2.3. Assist colleagues to overcome difficulty in meeting customer service standards using leadership, supervision, coaching and mentoring
3. Monitor, adjust and review customer service	3.1. Develop and use ***strategies*** to monitor progress in achieving product and/or service targets and standards 3.2. Develop and use strategies to obtain customer feedback to improve the provision of products and/or services 3.3. Develop, procure and use ***resources*** effectively to provide quality products and/or services to customers 3.4. Make decisions to overcome problems and to adapt customer services, products and/or service delivery in consultation with appropriate individuals and groups 3.5. Manage records, reports and recommendations within the organisation's systems and processes

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication, coaching and mentoring skills to provide support to colleagues
- problem-solving skills to deal with complex and non-routine difficulties.

Required knowledge

- techniques for solving complaints including the principles and techniques involved in the management and organisation of:
  - customer behaviour
  - customer needs research
  - customer relations
  - ongoing product and/or service quality
  - problem identification and resolution
  - quality customer service delivery
  - record keeping and management methods
  - strategies for monitoring, managing and introducing ways to improve customer service relationships
  - strategies to obtain customer feedback.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • plans, policies or procedures for delivering quality customer service • demonstrated techniques in solving complex customer complaints and system problems that lead to poor customer service • knowledge of techniques for solving complaints.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports • demonstration of techniques • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of performance in role plays • evaluation of leadership, supervision, coaching and mentoring used to assist colleagues to overcome difficulty in meeting customer service standards • review of strategies developed and used to monitor progress in achieving product and/or service targets and standards • review of records, reports and recommendations about managing customer service.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Management.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Customers may be:	• Board members • clients, purchasers of services • co-workers, peers and fellow frontline managers • members of the general public who make contact with the organisation, such as prospective purchasers of services • potential funding bodies • supervisors • suppliers of goods and services and contractors providing goods and services
Quality may refer to:	• characteristics of a product, system, service or process that meet the requirements of customers and interested parties
Strategies may refer to:	• databases and other controls to record and compare data over time • electronic feedback mechanisms using intranet, internet and email • feedback forms and other devices to enable communication from customers • long-term or short-term plans for monitoring achievement and evaluating effectiveness • policies and procedures • questionnaires, survey and interviews • training and development activities
Resources may include:	• buildings/facilities • equipment • finance • information • people • power/energy • technology • time

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Unit Sector(s)

Stakeholder Relations - Customer Service

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BSBFIA402A Report on financial activity

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to report financial activity for business both in response to client requests and to meet statutory requirements such as the completion of statutory requirement reports. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals with a broad knowledge of financial activities who contribute financial skills and knowledge to address reporting requirements of clients and legal authorities. They may have responsibility to provide guidance or to delegate aspects of these tasks to others.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Compile financial information and data	1.1. Collect, evaluate and code current ***financial data*** to ensure consistency, quality and accuracy in accordance with ***organisational requirements*** 1.2. Use ***conversion and consolidation procedures*** to compile analysis in accordance with organisational requirements 1.3. Make, record and disclose asset and liability valuations in accordance with organisational requirements 1.4. Ensure that ***discrepancies***, unusual features or queries are identified, resolved or referred to the appropriate authority
2. Prepare statutory requirement reports	2.1. Correctly record income and expenditure to ensure compliance with ***statutory requirements*** 2.2. Calculate liabilities for tax in accordance with current legislation and ***revenue gathering practices*** 2.3. Correctly identify relevant receipts, ***revenue documentation*** and payments 2.4. Ensure that statements and claims take full advantage of ***available benefits and allowances*** in accordance with statutory requirements 2.5. Submit statutory requirement reports to appropriate authorities within ***stated deadlines***
3. Provide financial business recommendations	3.1. Ensure that ***recommendations*** are logically derived and supported by ***evidence*** in report 3.2. Provide recommendations to propose constructive actions to enhance the effectiveness and efficacy of functions and services 3.3. Ensure recommendations are concise and facilitate direction and control of organisation's operations 3.4. Identify and prioritise ***significant issues*** in statements including comparative financial performances for review and decision making 3.5. Ensure structure and ***format of reports*** are clear and conform to organisational and statutory requirements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- literacy skills to identify financial information and the organisation's accounting procedures, and to create financial reports
- problem-solving skills to deal with a defined range of predictable problems
- decision making skills to make routine decisions
- numeracy skills to calculate data and to reconcile figures.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - financial legislation
  - occupational health and safety (OHS)
- principles of double entry bookkeeping and accrual accounting
- techniques for forecasting and analysis
- Federal government taxes and charges
- options, methods and practices for deductions, benefits and depreciations.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • organising financial data to highlight relevant features • presenting financial data in comprehensive format • completing Business Activity Statements • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of financial data, reports and documents.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of income and expenditure records • analysis of responses to case studies and scenarios • demonstration of techniques • review of tax liabilities calculations • oral or written questioning to assess knowledge of principles of double entry bookkeeping and accrual accounting • assessment of recommendations provided proposing constructive actions to enhance the effectiveness and efficacy of functions and services.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • general administration units • other financial administration units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Financial data may include:	• Australian Bureau of Statistics (ABS) economic data • budget variances • budgets and forecasts • cash flow/profit reports • financial markets monitoring services (e.g. Reuters) • financial/operational statements and reports (e.g. expenditures and receipts, profit and loss statements) • market valuations
Organisational requirements may include:	• financial analysis assessments • financial management manuals • legal and organisational policies, guidelines and requirements • OHS policies, procedures and programs • price and exchange parameters • quality assurance and/or procedures manuals • recording and filing systems • reporting requirements • standard financial analysis techniques
Conversion and consolidation procedures may include:	• moving averages • spreadsheets • standardised variables • trend analysis • unit costs
Discrepancies may include:	• absence of auditable trail • expenditure report mismatches • inappropriate authorisations • incorrect payments • incorrect report formats • unreconciled cash flows and operating statements

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RANGE STATEMENT	
	• variances from budget and phasings
Statutory requirements may include:	• delegated authorities • internal control procedures • reporting periods • taxation payment timings
Revenue gathering practices may include:	• billing schedules • fees and charges • investments • leasing • lending and financing • sales
Revenue documentation may include:	• bills • cash received • debit notes • declarations • invoices • sales proceeds
Available benefits and allowances may include:	• depreciation • donations • interest payments • sales tax deductions
Stated deadlines may include:	• annual reports • lodgement dates • monthly returns • payment schedules
Recommendations may include:	• cash flow • consolidation • expenses • loss • profit • write-offs
Evidence may include:	• budgetary analysis • forecasts and estimates • order and supplier documentation • returns on investments • taxation and statutory returns
Significant issues may include:	• cost structures • internal controls • losses and returns

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RANGE STATEMENT	
	• profitability • statutory obligations • suppliers
Format of reports may include:	• balance sheets • cash flow statements • electronic forms • financial year reports • operating statements • spreadsheets • statutory forms

Unit Sector(s)

Unit sector	

Competency field

Competency field	Finance - Financial Administration

Co-requisite units

Co-requisite units		

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BSBFIM501A Manage budgets and financial plans

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to undertake financial management within a work team in an organisation. This includes planning and implementing financial management approaches, supporting team members whose role involves aspects of financial operations, monitoring and controlling finances, and reviewing and evaluating effectiveness of financial management processes in line with the financial objectives of the work team and the organisation. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit addresses the requirement for managers to ensure that financial resources are used effectively. This is done by ensuring access to budget/s and ongoing monitoring expenditure against the budget/s. The unit applies to managers working in small and large business environments and not for profit organisations.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan financial management approaches	1.1. Access ***budget/financial plans*** for the work team 1.2. Clarify budget/financial plans with ***relevant personnel*** within the organisation to ensure that documented outcomes are achievable, accurate and comprehensible 1.3. Negotiate any changes required to be made to budget/financial plans with relevant personnel within the organisation 1.4. Prepare ***contingency plans*** in the event that initial plans need to be varied
2. Implement financial management approaches	2.1. Disseminate relevant details of the agreed budget/financial plans to team members 2.2. Provide ***support*** to ensure that team members can competently perform ***required roles*** associated with the management of finances 2.3. Determine and access ***resources and systems*** to manage financial management processes within the work team
3. Monitor and control finances	3.1. Implement ***processes*** to monitor actual expenditure and to control costs across the work team 3.2. Monitor expenditure and costs on an agreed cyclical basis to identify cost variations and expenditure overruns 3.3. Implement, monitor and modify contingency plans as required to maintain financial objectives 3.4. ***Report*** on budget and expenditure in accordance with organisational protocols
4. Review and evaluate financial management processes	4.1. Collect and collate for analysis, ***data and information on the effectiveness of financial management processes*** within the work team 4.2. Analyse data and information on the effectiveness of financial management processes within the work team and identify, document and recommend any improvements to existing processes 4.3. Implement and monitor agreed improvements in line with financial objectives of the work team and the organisation

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• numeracy skills to read and understand a budget and to update a budget • technology skills to use software associated with financial record keeping.
Required knowledge

• basic accounting principles
• organisational requirements related to financial management
• relevant legislation and current requirements of the Australian Taxation Office, including GST
• requirements for organisational record keeping and auditing
• principles and techniques involved in:
  • budgeting
  • cash flows
  • electronic spreadsheets
  • GST
  • ledgers and financial statements
  • profit and loss statements.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • financial skills required to work with and interpret budgets, ageing summaries, cash flow, petty cash, GST, and profit and loss statements • knowledge of the record keeping requirements for the ATO and for auditing purposes.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports indicating broad knowledge of managing budgets and managing financial resources in the organisation • demonstration of techniques using financial record keeping software • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of requirements for organisational record keeping and auditing • review of contingency plans • review of identification of cost variations and expenditure overruns • evaluation of documentation reportingon budget and expenditure • review of documentation identifying and recommending improvements to financial management processes.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

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EVIDENCE GUIDE	
	• other units from the Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Budget/financial plans may include:	• cash flow projections • long-term budgets/plans • operational plans • short-term budgets/plans • spreadsheet-based financial projections • targets or key performance indicators for production, productivity, wastage, sales, income and expenditure
Relevant personnel may include:	• financial managers, accountants or financial controllers • supervisors, other frontline managers
Contingency plans may include:	• contracting out or outsourcing human resources and other functions or tasks • diversification of outcomes • finding cheaper or lower quality raw materials and consumables • increasing sales or production • recycling and re-using • rental, hire purchase or alternative means of procurement of required materials, equipment and stock • restructuring of organisation to reduce labour costs • risk identification, assessment and management processes • seeking further funding • strategies for reducing costs, wastage, stock or consumables • succession planning
Support may include:	• access to specialist advice • documentation of procedures • help desk or identified experts within the organisation • information briefings or sessions

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RANGE STATEMENT	
	• intranet-based information • training including mentoring, coaching and shadowing
Required roles may include:	• arranging for use of corporate credit cards • banking • debt collection • ensuring security, accuracy and currency of financial operations • invoicing clients, customers and consumers • maintaining journals, ledgers and other record keeping systems • maintaining petty cash system • purchasing and procurement • wages and salaries payments and record keeping
Resources and systems may include:	• hardware and software • human, physical or financial resources • record keeping systems (electronic and paper-based) • specialist advice or support

Processes to monitor actual expenditure and to control costs across the work team include:	• reporting of:
	  • assets
	  • consumables
	  • equipment
	  • expenditure
	  • income
	  • stock
	  • wastage

Reporting may include data from:	• bank statements • credit card statements • financial reports • invoices and receipts • ledgers and journals • logs • petty cash records • spreadsheet-based records
Data and information on the effectiveness of financial management processes may include records (paper-based and	• bank account records • cash flow data • contracts

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RANGE STATEMENT	
electronic) related to:	• credit card receipts • employee timesheets • files of paid purchase and service invoices • income and expenditure • insurance reports • invoices • job costings • petty cash receipts • quotations • taxation records • wages/salaries books

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBFLM303C Contribute to effective workplace relationships

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to gather information and maintain effective working relationships and networks, with particular regard to communication and representation. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	Frontline managers have a key role in contributing to efficient and effective work teams within the context of the organisation. They play a prominent part in motivating, mentoring, coaching and developing team cohesion through providing leadership for the team and forming the bridge between the management of the organisation and the team members. At this level, work will normally be carried out within known routines, methods and procedures which require the exercise of some discretion and judgement. This unit is related to BSBWOR401A Establish effective workplace relationships.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Seek, receive and communicate information and ideas	1.1. Collect ***information*** associated with the achievement of work responsibilities from appropriate ***sources*** 1.2. Communicate ideas and information to ***diverse audiences*** in an appropriate and sensitive manner 1.3. Seek contributions from internal and external sources to develop and refine new ideas and approaches in accordance with organisational processes 1.4. Facilitate ***consultation processes*** to allow employees to contribute to issues related to their work, and promptly communicate outcomes of consultation to the work team 1.5. Promptly deal with and resolve issues raised, or refer them to ***relevant personnel***
2. Encourage trust and confidence	2.1. Treat people with integrity, respect and empathy 2.2. Encourage effective relationships within the framework of ***the organisation's social***, ***ethical and business standards*** 2.3. Gain and maintain the trust and confidence of ***colleagues***, ***customers and suppliers*** through competent performance 2.4. Adjust interpersonal styles and methods in relation the to organisation's social and cultural environment
3. Identify and use networks and relationships	3.1. Identify and utilise ***workplace networks*** to help build relationships 3.2. Identify and describe the value and benefits of networks and other work relationships for the team and the organisation
4. Contribute to positive outcomes	4.1. Identify difficulties and take action to rectify the situation within own level of responsibility according to organisational and legal requirements 4.2. Support colleagues in resolving work difficulties 4.3. Regularly review ***workplace outcomes*** and implement improvements in consultation with relevant personnel 4.4. Identify and resolve ***poor work performance*** within own level of responsibility and according to organisational policies 4.5. Deal constructively with conflict, within the organisation's established processes

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities
- coaching and mentoring skills to provide support to colleagues
- functional literacy skills to access and use workplace information
- relationship management and communication skills to:
  - interpret information from a variety of people
  - respond to unexpected demands from a range of people
  - gain the trust and confidence of colleagues
  - deal with people openly and fairly
  - forge effective relationships with internal and/or external people.

Required knowledge

- principles and techniques associated with relationship management, including:
  - developing trust and confidence
  - behaving consistently in work relationships
  - identifying the cultural and social environment
  - identifying and assessing interpersonal styles
  - establishing networks
  - identifying and resolving problems
  - handling conflict
  - managing poor work performance
  - monitoring and improving work relationships
  - using anti-discrimination/bias strategies and making contributions
- relevant legislation from all levels of government that may affect business operation, especially in regard to:
  - occupational health and safety and environmental issues
  - equal opportunity
  - industrial relations
  - anti-discrimination.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • using culturally appropriate communication techniques to share work-based information with teams and individuals in accordance with organisation policies • developing networks and building team relationships • regularly reviewing workplace outcomes to identify and resolve issues and implement improvements within own level of responsibility and according to organisational policies.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge and understanding of principles of relationship management and organisation's social, ethical and business standards • presentation of examples of actions taken by the candidate to build networks and contribute to positive workplace relationships and outcomes.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other management or frontline managementunits.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Information may include:	• archived, filed and historical background data • electronic or manual transmission • individual and team performance data • marketing and customer-related data • organisation policies and procedures • planning and organisational documents including the outcomes of continuous improvement and quality assurance • written or verbal communications

Sources of information may be:	• external, such as:
	  • external customers
	  • web based resources
	  • reports
	• internal, such as:
	  • supervisors, managers and peers
	  • organisation policies and procedures
	  • workplace documents

Diverse audiences may include:	• persons with specific social, cultural and other needs that require a range of strategies and approaches including adjusting communication
Consultation processes may include:	• feedback to the work team and relevant personnel in relation to outcomes of the consultation process • opportunity for employees to contribute ideas and information
Relevant personnel may include:	• OHS committees and OHS representatives • people with specialist responsibilities • supervisors, managers and other employees • union representatives/groups
The organisation's social, ethical and business standards may refer to:	• implied standards such as honesty and respect relative to the organisation culture and generally accepted within the wider community

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RANGE STATEMENT	

	• rewards and recognition for high performing staff
	• standards expressed in legislation and regulations such as anti-discrimination legislation
	• written standards such as those expressed in:
	  • vision and mission statements
	  • policies
	  • code of workplace conduct/behaviour
	  • dress code
	  • statement of workplace values

Colleagues, ***customers and suppliers*** may include:	• employees at the same level and more senior managers • internal and external contacts • people from a wide variety of social, cultural and ethnic backgrounds • team members
Workplace networks may be:	• formal or informal • individuals or groups • internal or external • structured or unstructured
Workplace outcomes may include:	• OHS processes and procedures • performance of the work team
Poor work performance may relate to:	• self or work team; or it may extend to the organisation as a whole

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Frontline Management

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Co-requisite units

Co-requisite units		

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BSBFLM305C Support operational plan

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to provide support for operational practices and procedures within the organisation's productivity and profitability plans. This includes contributing to the operational plan, assisting in recruiting employees and acquiring resources, and monitoring and adjusting operational performance. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	Frontline managers are actively engaged in planning activities to achieve the measurable, stated objectives of the team and the organisation. This key role is carried out to provide safe, efficient and effective products and services to customer satisfaction within the organisation's productivity and profitability plans. At this level, work will normally be carried out within known routines, methods and procedures, and may also involve a number of complex or non routine activities that require some discretion and judgement. This unit is related to BSBMGT402A Implement operational plan.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Contribute to implementation of operational plan	1.1. Collect and record details of ***resource requirements*** and report to ***relevant personnel*** 1.2. Ensure the ***operational plan*** contributes to the achievement of the organisation's performance and business plan 1.3. Identify ***key performance indicators*** to measure own and work team's performance 1.4. Undertake ***contingency planning*** as required 1.5. Support the development and presentation of proposals for resource requirements as required
2. Assist in recruiting employees and acquiring resources	2.1. Assist with employee recruitment and/or induction as required, within ***the organisation's policies***, ***practices and procedures*** 2.2. Acquire physical resources and services according to the organisation's policies, practices and procedures and in consultation with relevant personnel
3. Support operations	3.1. Identify and utilise ***performance systems and processes*** to assess team progress in achieving plans and targets 3.2. Compare actual productivity and performance with identified short-term budgets, targets and performance results 3.3. Identify and report unsatisfactory performance to relevant personnel, to enable action to be taken to rectify the situation 3.4. Provide coaching to support individuals and teams to use resources effectively, economically and safely 3.5. Support ***consultation processes*** for the development and/or variation of the operational plan as required 3.6. Present recommendations for variation to operational plans to relevant personnel 3.7. Follow performance ***systems***, ***procedures and recording processes*** in accordance with organisation requirements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities
- coaching and mentoring skills to provide support to colleagues
- functional literacy skills to access and use workplace information
- skills to:
  - maintain a safe workplace and environment
  - access and use feedback to improve operational performance
  - prepare recommendations to improve operations
  - access and use established systems and processes.

Required knowledge

- principles and techniques of:
  - short-term operational scheduling
  - physical resources and services acquisition procedures and/or systems
  - budget and performance figures interpretation
  - performance monitoring within defined job role
  - performance reporting
  - problem identification and resolution
  - alternative approaches to improving resource usage and eliminating resource inefficiencies and waste within defined job role
- relevant legislation from all levels of government that may affect business operations, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- support for individuals and teams who have difficulty in performing to the required standard.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • sharing information with members of the work team about implementing and monitoring the operational plan • assisting in planning resource acquisition and usage including human resources, risk management and contingency planning • monitoring, analysing and reporting individual and team performance against identified targets.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.

Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:
	• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate
	• records produced while working with the operational plan, such as:
	  • suggestions for variations to the operational plan
	  • rosters and staff allocation
	  • short-term resource acquisition planning, contingency planning and/or risk management plans
	  • induction programs conducted
	  • suggestions and input into management decisions related to the operational plan
	  • records of actions taken to address day-to-day resource shortfalls.

Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

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EVIDENCE GUIDE	
	• BSBFLM303C Contribute to effective workplace relationships • BSBFLM306C Provide workplace information and resourcing plans • BSBFLM312C Contribute to team effectiveness • BSBCMN311B Maintain workplace safety.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Resource requirements may include:	• purchasing or ordering of goods • stock requirements and requisitions • supply of resources.
Relevant personnel may include:	• colleagues, supervisors and managers • OHS committees and other people with specialist responsibilities • specialist resource managers • unions/employee groups • other employees.
Operational plan may include:	• organisational plans • tactical plans developed by the department or section to detail product and service performance.
Key performance indicators may refer to:	• measures for monitoring or evaluating the efficiency or effectiveness of a system, and which may be used to demonstrate accountability and identify areas for improvements.
Contingency planning may refer to:	• contracting or outsourcing human resource and other functions or tasks • diversification of outcomes • finding cheaper or lower quality raw materials and consumables • increasing sales or production • recycling and re-use • rental, hire purchase or alternative means of procurement of required materials, equipment and stock • restructuring of organisation to reduce labour costs • risk identification, assessment and management processes • seeking further funding • strategies for reducing costs, wastage, stock or

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RANGE STATEMENT	
	consumables • succession planning.
The organisation's policies practices and procedures may include:	• organisational guidelines which govern and prescribe operational functions, such as the acquisition and management of human and physical resources • organisational culture • Standard Operating Procedures • undocumented practices in line with organisational operations.

Performance systems and processes may be:	• formal or informal processes within the organisation, such as:
	  • Key Performance Indicators (KPIs)
	  • specified work outcomes
	  • individual and team work plans
	  • feedback arrangements
	• informal systems used in the place of existing organisation-wide systems.

Consultation processes may refer to:	• mechanisms used to provide feedback to the work team in relation to outcomes of consultation • meetings, interviews, brainstorming sessions, email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual operational plans.
Performance systems, procedures and recording processes may include:	• databases and other recording mechanisms • individual and team performance plans • organisational policies and procedures relative to performance.

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Frontline Management

Co-requisite units

Co-requisite units		

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BSBFLM312B Contribute to team effectiveness

Modification History

Not Applicable

Unit Descriptor

This specifies the outcomes required to by frontline managers to contribute to the effectiveness of the work team. It involves planning with the team to meet expected outcomes, developing team cohesion, participating in and facilitating the work team, and communicating with the management of the organisation.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Frontline managers have a key role in developing efficient and effective work teams within the context of the organisation. They play a prominent part in motivating, mentoring, coaching and developing team cohesion by providing leadership for the team and forming the bridge between the management of the organisation and the team members.
At this level, work will normally be carried out within known routines, methods and procedures, and may also involve a number of complex or non routine activities that require some discretion and judgement.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Contribute to team outcomes	1.1. Consult team members to identify ***team purpose***, ***roles***, ***responsibilities***, ***goals***, ***plans and objectives*** 1.2. Support team members to meet expected outcomes
2. Support team cohesion	2.1. Encourage team members to participate in the planning, decision making and operational aspects of the work team to their level of responsibility 2.2. Encourage team members to take responsibility for their own work and to assist each other in undertaking required roles and responsibilities 2.3. Provide ***feedback*** to team members to encourage, value and reward team members' efforts and contributions 2.4. Identify and address issues, concerns and problems identified by team members to ***relevant persons*** as required
3. Participate in work team	3.1. Actively encourage and support team members to participate in team activities and communication processes and to take ***responsibility for their actions*** 3.2. Support the team to identify and resolve problems which impede its performance 3.3. Utilise own contribution to work team to serve as a role model for others and enhance the organisation's image within the work team, the organisation and with clients/customers
4. Communicate with management	4.1. Maintain open ***communication*** with ***line manager***/***management*** at all times 4.2. Communicate information from line manager/management to the team 4.3. Communicate ***unresolved issues*** to line manager/management and follow-up to ensure action is taken in response to these matters

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills

- ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities
- communication skills, including listening
- basic training skills, including mentoring and coaching
- planning and organising skills
- problem solving skills
- attributes:
  - empathic
  - communicative
  - self aware
  - supportive
  - trusting
  - open
  - flexible
  - accommodating
  - initiating
  - loyal
  - fair
  - adaptable

Required knowledge

Required knowledge

- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- organisational policies and procedures
- organisational goals, objectives and plans at both tactical and strategic levels
- organisational structure including organisational chart
- learning and development options available within and through organisation
- a general understanding of the principles and techniques of:
  - group dynamics and processes
  - motivation
  - planning
  - negotiation

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- individual behaviour and difference

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • managed communication consultations processes in relation to: • team cohesion • performance plan • induction process for new team members • performance management system implementation • handling problems • management advice in relation to human resource management of the work team
Context of and specific resources for assessment	Assessment must ensure: • that this unit can be assessed in the workplace or in a closely simulated work environment • access by the learner and trainer to appropriate documentation and resources normally used in the workplace • where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment • that examples of actions taken by candidate to contribute to team effectiveness are provided

Method of assessment	A range of assessment methods should be used to assess skills and knowledge. The following examples are appropriate for this unit:
	• Direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate
	• Records produced from working in a team, such as:
	  • reports
	  • minutes or records of meetings
	  • work journals or diaries

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	• learning and development plans developed with team members • records of actions taken to address issues raised by team members
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Legislation, codes and national standards relevant to the workplace may include:	• award and enterprise agreements and relevant industrial instruments • relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety (OHS) and environmental issues, equal opportunity, industrial relations and anti-discrimination • relevant industry codes of practice
OHS considerations may include:	• provision of information about OHS legislative requirements, guidelines and the organisation's OHS policies, procedures and programs • training of all employees in health and safety procedures • participation in the regular update of OHS systems and procedures • changes to work practices, procedures and the working environment which impact on OHS
Team purpose, ***roles***, ***responsibilities***, ***goals***, ***plans and objectives*** may include:	• goals for individuals and the work team • expected outcomes and outputs • individual and team performance plans and Key Performance Indicators (KPIs) • action plans, business plans and operational plans linked to strategic plans • OHS responsibilities
Feedback may refer to:	• communication of ideas and thoughts which focus on specific tasks, outcomes, decisions, issues or behaviours • formal/informal gatherings between team members where there is discussion on work-related matters
Relevant persons may include:	• frontline manager's direct superior or other management representatives • colleagues

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	• designated personnel e.g. safety officer
Responsibility for their actions may involve:	• individuals and teams • individual and joint actions
Communication may include:	• verbal, written or electronic communication • face-to-face • formal/informal interaction
Line manager/management may refer to:	• frontline manager's direct superior or other management representatives
Unresolved issues may include:	• issues, concerns and tensions • problems related to work roles and responsibilities • grievances and complaints • any matters affecting workplace relationships and team cohesion

Unit Sector(s)

Management and Leadership - Frontline Management services

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BSBHRM501A Manage human resources services

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to plan and oversee and deliver human resources services. It is not specific to any given human resources function and deals with the coordination of services and approaches. This unit takes an overview of human resources services and includes business ethics. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to human resources managers with broad experience who have responsibility for coordinating a range of human resources practices across an organisation. They may have other human resources staff reporting to them.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine strategies for delivery of human resources services	1.1. Analyse strategic and operational plans to determine ***human resources requirements*** 1.2. Consult line and senior managers to identify human resources needs within their area 1.3. Develop ***options*** for delivery of human resources services 1.4. Ensure options for human resources services comply with ***legislative requirements and organisational policies*** 1.5. Develop and agree on strategies and action plans for delivery of human resources services 1.6. Agree and document roles and responsibilities of human resources team, line managers, and external contractors
2. Manage the delivery of human resources services	2.1. Develop and negotiate service agreements between the human resources team, service providers and client groups 2.2. Document and communicate service specifications, performance standards and timeframes 2.3. Identify and arrange training support if required 2.4. Agree and arrange monitoring of quality assurance processes 2.5. Ensure that services are delivered by appropriate providers in accordance with service agreements and operational plans 2.6. Identify and rectify underperformance of human resources team or service providers
3. Evaluate human resources service delivery	3.1. Survey clients to determine level of satisfaction 3.2. Capture on-going client feedback for the review processes 3.3. Analyse feedback and surveys and recommend changes to service delivery 3.4. Obtain approvals to variations in service delivery from appropriate managers
4. Manage integration of business ethics in human resources practices	4.1. Ensure that personal behaviour is consistently ethical and reflects values of the organisation 4.2. Ensure that Code of Conduct is observed across the organisation and that its expectations are incorporated in human resources policies and practices

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ELEMENT	PERFORMANCE CRITERIA
	4.3. Observe confidentiality requirements in dealing with all human resources information 4.4. Deal with unethical behaviour promptly 4.5. Ensure that all human resources staff are clear about ethical expectations of their behaviour

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• analytical and problem-solving skills to review business and operational plans and to develop and evaluate human resources strategies to support these plans • communication and negotiation skills to consult with key stakeholders across the organisation and to ensure their support for human resources strategies • communication skills to manage service delivery • learning skills to see that performance is managed and skills are developed in a range of contexts.
Required knowledge
• human resources strategy and planning processes as they relate to business and operational plans • performance and contract management • relevant legislation which applies to human resources.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated skills in planning and implementing a coordinated approach to human resources functions across the organisation • demonstration of engaging key stakeholders, implementing methods for developing and monitoring human resources plans, and aligning human resources with broader business objectives • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports/examples of human resources plans and evaluations of those plans • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to assess knowledge of performance and contract management • review of documentation outlining roles and responsibilities of human resources team, line managers, and external contractors • review of documentation outlining service specifications, performance standards and timeframes and documentation of how these were communicated.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Human Resource

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EVIDENCE GUIDE	
	Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Human resources requirements may include:	• assessment and development centres • career management • competency development processes • counselling • discrimination, vilification and harassment advice • education and training programs • feedback • flexible work arrangements • induction and orientation programs • industrial relations advice • occupational health and safety (OHS) • personal and career development planning • rehabilitation and return to work • remuneration/benefits advice • self-analysis and self-assessment • staff selection • succession planning • tele-working procedures • workers compensation
Options will include:	• cost benefit analysis • risk analyses • recommendations to relevant groups and individuals - all those who have a role in the implementation of policies, procedures or decisions and/or are affected by their implementation
Legislative requirements and organisational policies may include:	• award and enterprise agreements, and relevant industrial instruments • relevant industry codes of practice • relevant legislation from all levels of government that affects business operation, especially in regard to OHS and environmental issues, equal opportunity, industrial relations

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RANGE STATEMENT	
	and anti-discrimination

Unit Sector(s)

Unit sector	

Competency field

Competency field	Workforce Development - Human Resource Management

Co-requisite units

Co-requisite units		

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BSBHRM506A Manage recruitment selection and induction processes

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage all aspects of the recruitment selection and induction processes in accordance with organisational policies and procedures. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to human resources managers or human resources personnel who take responsibility for managing all aspects of selecting new staff and orientating those staff to their new positions. It is not assumed that the manager will be directly involved in the selection processes themselves, although this may well be the case. In small organisations this role may belong to someone who is not a dedicated human resources professional; the unit however will still be applicable.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop recruitment, selection and induction policies and procedures	1.1. Analyse strategic and operational plans and policies to identify relevant policies and objectives 1.2. Develop ***recruitment***, ***selection and induction policies and procedures*** and supporting documents 1.3. Review options for technology to improve the efficiency and effectiveness of the recruitment and selection process 1.4. Obtain support for policies and procedures from senior managers 1.5. Trial forms and documents that support policies and procedures and make necessary adjustments 1.6. Communicate policies and procedures to relevant staff and provide training if required
2. Recruit and select staff	2.1. Determine future human resources needs in collaboration with ***relevant managers and sections*** 2.2. Ensure current position descriptors and person specifications for vacancies are used by managers and others involved in the recruitment, selection and induction processes 2.3. Provide access to training and other forms of support to all persons involved in the recruitment and selection process 2.4. Ensure that ***advertising*** of vacant positions complies with organisational policy and legal requirements 2.5. Utilise ***specialists*** where necessary 2.6. Ensure that ***selection procedures*** are in accordance with organisational policy and legal requirements 2.7. Ensure that processes for advising applicants of selection outcome are followed 2.8. Ensure that job offers and contracts of employment are executed promptly and that new appointments are provided with advice about salary, terms and conditions
3. Manage staff induction	3.1. Provide access to training and ongoing support for all persons engaged in staff induction 3.2. Check that induction processes are followed across the organisation 3.3. Oversee the management of probationary employees and provide them with feedback until their employment is confirmed or terminated

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ELEMENT	PERFORMANCE CRITERIA
	3.4. Obtain feedback from participants and relevant managers on the extent to which the induction process is meeting its objectives 3.5. Make refinements to induction policies and procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to liaise across the organisation and to ensure that policies and procedures are well supported • leadership skills to engage others and to ensure that good processes are followed and supported • literacy skills to document clear policies and procedures and to develop proformas to support recruitment, selection and induction.
Required knowledge
• concept of outsourcing • diversity, equal employment opportunity and anti-discrimination principles and associated legislation • employee contracts • industrial relations • recruitment and selection methods, including assessment centres • relevant legislation on equal opportunity, industrial relations and anti-discrimination • relevant terms and conditions of employment • understanding of psychometric and skills testing programs • workplace relations regulations, workplace relations legislation and other relevant legislation.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development of a policy and procedures framework for recruitment, selection and induction OR critical analysis of an existing policy and procedures framework for recruitment, selection and induction • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports on recruitment, selection and induction processes • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of training and other forms of support provided to all persons involved in the recruitment and selection process • evaluation of trialling of forms and documents that support policies and procedures • review of documentation outlining feedback obtained from participants and relevant managers on the extent to which the induction process is meeting its objectives • oral or written questioning to assess knowledge of relevant legislation and selection processes.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units form the Diploma of Human Resource Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Recruitment, ***selection and induction policies and procedures*** may address:	• application processing • competency profiling • documentation and use of standard forms • equal opportunity, anti-discrimination and diversity principles • interviewing methodologies • job analysis • job classifications, assessment centres • job description • job evaluation • privacy and confidentiality • probationary periods • psychometric assessment • recruitment advertising • reference checks • selection panels and their composition • the application of commercial software packages to improve efficiency in recruitment and selection processes • training for new staff • use of external agencies
Relevant managers and sections includes:	• those who have a role in the recruitment selection or induction processes
Advertising may occur through:	• internal channels • internet • newspapers • radio • recruitment agencies or specialists • television
Specialists may include:	• recruitment agencies • remuneration specialists • staff who run security checks

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RANGE STATEMENT	
	• vocational psychologists
Selection procedures may include:	• aptitude test or IQ tests • behaviour in leaderless groups • demonstration of techniques or technical skills • interviews, including structured interviews, behavioural interviews or other interviewing methodologies • peer assessments • personality testing • psychometric testing • referee reports • use of an assessment centre • work samples

Unit Sector(s)

Unit sector	

Competency field

Competency field	Workforce Development - Human Resource Management

Co-requisite units

Co-requisite units		

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BSBINM401A IMPLEMENT WORKPLACE INFORMATION SYSTEM

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to implement the workplace information system. It involves the identification, acquisition, initial analysis and use of appropriate information, which plays a significant part in the organisation's effectiveness. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	Frontline managers play a significant role in contributing to the organisation's effectiveness in identifying, acquiring, analysing and using appropriate information. At this level, work will normally be carried out within routine and non routine methods and procedures, which require planning and evaluation, leadership and guidance of others, and some discretion and judgement.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and source information needs	1.1. Determine and locate ***information*** required by teams 1.2. Acquire and review information held by the organisation to determine suitability, accessibility, currency and reliability according to ***organisational policies***
2. Collect, analyse and report information	2.1. Collect information, which is adequate and relevant to the needs of teams, in a timely manner 2.2. Ensure information is in a format suitable for analysis, interpretation and dissemination 2.3. Analyse information to identify and report relevant trends and developments in terms of the needs for which it was acquired
3. Implement information systems	3.1. Implement management information systems effectively to store, retrieve and regularly review data for decision making purposes 3.2. Use ***technology*** available in the work area to manage information effectively 3.3. Submit recommendations for improving the information system to ***designated persons and/or groups***
4. Prepare for information system changes	4.1. Collect information about information system future needs in consultation with ***colleagues***, including those who have a specialist role in resource management 4.2. Ensure estimates of information system future needs reflect the organisation's ***business plans***, and customer and supplier requirements 4.3. Support proposals to secure resources by clearly presenting submissions that describe realistic options, benefits, costs and outcomes 4.4. Prepare team members to work with new technology and information system changes

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to work with information, and to research and present information in ways that are appropriate to the work team • technology skills to work with a range of information systems.
Required knowledge

• information management systems and technology that would be associated with the workplace such as:
  • budgets and financial management systems
  • customer information software or records
  • databases
  • personal digital assistant (PDA)
  • product and service information
  • project management software
  • record management systems
  • spreadsheets.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • analysis of the information that is required for the effective functioning of the team's work together • knowledge of the range of information systems that are, or should be, available in the workplace • ability to recognise what information system changes and improvements will be required in the future.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • demonstration of techniques in working with information management systems • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of relevant technology • review of documentation analysing information trends and developments • written reports on future information system needs • review of preparation undertaken for team members to work with new technology and information system changes.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Certificate IV in Frontline Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Information may include:	• archived, filed and historical background data • continuous improvement and quality assurance data • data available internally or externally • data shared and retrieved in various forms such as in writing or verbally, electronically or manually • financial and contractual data • marketing and customer-related data • organisational performance data • planning and organisational documents • policies and procedures
Organisational policies may include:	• guidelines for decision making throughout the organisation that link the formulation of strategy with its implementation • sets of accepted actions approved by the organisation • Standard Operating Procedures
Technology may include:	• computerised systems and software such as databases, project management and word processing • telecommunications devices • any other technology used to carry out work roles and responsibilities
Designated persons and/or groups may include:	• groups designated in workplace policies and procedures • managers or supervisors with management roles and responsibilities concerning information systems • other stakeholders accessing the information system such as customers and service providers • other work groups or teams whose work will be affected by the system

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RANGE STATEMENT	
Colleagues may include:	• employees at the same level or more senior managers • occupational health and safety committee members and other specialists • people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities • team members
Business plans may include:	• cash flow projections • long-term budgets/plans • operational plans • short-term budgets/plans • spreadsheet-based financial projections • targets or key performance indicators for production, productivity, wastage, sales, income and expenditure

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBINM501A Manage an information or knowledge management system

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to organise learning to use an information or knowledge management system and to manage the use of the system. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to managers who have responsibility for seeing that key information and corporate knowledge are retained, accessible to others and improve business outcomes. The unit does not address the requirement to select the technical system (software or hardware), which is seen as the role of an information technology specialist, although in some smaller organisations this may be a part of the manager's role.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise learning to use information or knowledge management system	1.1. Identify learning needs of ***relevant personnel*** and ***stakeholders*** for input into, and use of, ***an information or knowledge management system*** 1.2. Identify and secure human, financial and physical resources required for ***learning activities*** to use an information or knowledge management system 1.3. Organise and facilitate learning activities 1.4. Promote and support use of the system throughout the organisation 1.5. Monitor and document effectiveness of learning activities
2. Manage use of information or knowledge management system	2.1. Ensure implementation of ***policies and procedures for the information or knowledge management system*** are monitored for compliance, effectiveness and efficiency 2.2. Address implementation issues and problems as they arise 2.3. Monitor integration and alignment with data and information systems 2.4. Collect information on achievement of ***performance measures*** 2.5. Manage contingencies such as system failure or technical difficulties by accessing technical specialist help as required
3. Review use of information or knowledge management system	3.1. Analyse effectiveness of system and report on strengths and limitations of the system 3.2. Review business and operational plan and determine how effectively the system is contributing to intended outcomes 3.3. Make recommendations for improvement to system, policy or work practices

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• analytical and problem-solving skills to ensure the system is working in accordance with organisational expectations and to deal with contingencies • technology skills to work with and manage the use of the information or knowledge management system.
Required knowledge

• legislation, codes of practice and national standards, for example:
  • privacy and confidentiality legislation
  • freedom of information legislation
  • AS 5037:2005 Knowledge management - A guide
• organisational policies and procedures, for example:
  • records management
  • information management
  • customer service
  • commercial confidentiality
• organisational operations, and existing data and information systems.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • analysis of the strengths and weaknesses of information or knowledge management system/s and evaluation of suitability for a particular work or organisational context • knowledge of relevant legislation, codes of practice and national standards.
Context of and specific resources for assessment	Assessment must ensure: • access to system • access to system user feedback.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports reviewing and evaluating information or knowledge management systems • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to assess knowledge of relevant organisational policies and procedures • review of identified learning needs personnel and stakeholders regarding the information or knowledge management system • evaluation of monitoring and documentation about the effectiveness of learning activities • analysis documentation reporting on the strengths and limitations of the system • review of recommendations made for improvements to the system, policy or work practices.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended,

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EVIDENCE GUIDE	
	for example: • other units from the Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant personnel include:	• managers, leaders, supervisors and coordinators • owners • staff, team members and colleagues
Stakeholders include:	• clients and customers • employee representatives • funding bodies • industry, professional and trade associations • regulatory bodies and authorities • sponsors • tenderers, suppliers and contractors
Information or knowledge management is defined as:	• equipment, strategies, methods, activities and techniques used formally and informally by individuals and the organisation to identify, collect, organise, store, retrieve, analyse, share and draw on information and knowledge valuable to the work of the organisation
An information or knowledge management system:	• comprises policies, protocols, procedures and practices to manage information or knowledge within the organisation and among relevant stakeholders
Learning activities include:	• coaching and mentoring programs • help desks • information sessions, briefings, workshops and training programs • paper-based or electronic (including intranet) learning opportunities • use of expert workers such as coaches and mentors to help other personnel use the system
Policies and procedures for the information or knowledge management system cover:	• complying with legislative requirements (such as privacy, confidentiality and defamation requirements) and other policies and procedures • content guidelines

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RANGE STATEMENT	
	• ensuring accuracy and relevance of knowledge input into the system • mechanisms, formats and styles of input to system, including appropriate alternative formats for people with a disability • permissions for input • removing out-of-date, inaccurate and content that is no longer relevant • selecting, maintaining and disposing of knowledge in the system • sharing knowledge in the system
Performance measures include:	• key performance indicators • other systems and measures to enable assessment of how, when, where and why outcomes are being achieved • performance objectives • performance standards (including codes of conduct) • qualitative or quantitative mechanisms to measure individual performance

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBINM601A Manage knowledge and information

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to develop and maintain information processing systems to support decision making, and to optimise the use of knowledge and learning throughout the organisation. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to people working in management roles who have responsibility for ensuring that critical knowledge and information are readily available to review the organisation's performance and to ensure its effective functioning. Knowledge and information can include business performance data, customer feedback, statistical data and financial data.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Obtain information relevant to business issues	1.1. Review staff and customer feedback and business performance data 1.2. Identify, define and analyse business problems and issues 1.3. Identify information required to reach a decision on problems/issues 1.4. Source and gather reliable information 1.5. Test information for reliability and validity, and reject where contradictory or ambiguous 1.6. Utilise formal and informal networks to access corporate knowledge/memory not held in formal systems and review appropriately
2. Analyse information and knowledge	2.1. Ensure objectives for analyses are clear, relevant and consistent with the decisions required 2.2. Identify patterns and emerging trends correctly and interpret as to cause and effect 2.3. Utilise ***statistical analyses*** and interpretation where appropriate 2.4. Undertake ***sensitivity analysis*** on any proposed options 2.5. Ensure documentation reflects a logical approach to the evaluation of the evidence and conclusions drawn 2.6. Adjust ***management information systems***/***decision support systems*** to meet information processing objectives
3. Take decisions on business issues identified	3.1. Ensure sufficient valid and reliable information/evidence is available to support a decision 3.2. Utilise ***risk management*** plans to determine acceptable courses of action 3.3. Utilise appropriate ***quantitative methods*** to assist decision making 3.4. Consult specialists and other ***relevant groups and individuals*** 3.5. Ensure decisions taken are within the delegation/accountability of the group/individual responsible 3.6. Make decisions in accordance with organisational guidelines and procedures

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ELEMENT	PERFORMANCE CRITERIA
	3.7. Ensure decisions taken are consistent with organisational objectives, values and standards 3.8. Ensure decisions are taken in a timely manner
4. Disseminate information to the organisation	4.1. Ensure advice/information needs are documented and are specific to location, format and time line requirements 4.2. Document information and update databases regularly 4.3. Design and test systems to meet information requirements of decision makers 4.4. Ensure information is up-to-date, accurate, relevant and sufficient for the recipient 4.5. Develop ***communication plans*** and disseminate information 4.6. Adhere to confidentiality/privacy policies in the transmission/release of information/advice 4.7. Review and update communication plans regularly 4.8. Utilise ***technology*** which provides optimum efficiency and quality 4.9. Maintain ***corporate knowledge*** and ensure security

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE This section describes the skills and knowledge required for this unit.
Required skills
• analytical skills to identify improvement opportunities in relation to the services/products delivered internally or concepts/ideas in area of expertise • communication and consultation skills to ensure all relevant groups and individuals are advised of what is occurring and are provided with an opportunity for input • quantitative and qualitative research skills to locate and review relevant data and information • technology skills to consider various software and hardware options for storing and accessing data and information.
Required knowledge
• new technologies and their suitability to knowledge and information management • risk management.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • documentation which tracks a particular problem/issue through information gathering and analysis, decision making and taking, and dissemination to relevant groups and individuals • development and utilisation of relevant information storage and retrieval systems, as well as accessing informal knowledge and information from informal networks within the organisation • knowledge of new technologies and their suitability to knowledge and information management.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports on knowledge management and information management • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of information management systems • review of documentation identifying, defining and analysing business problems and issues • evaluation of communication plans • evaluation of the transmission/release of information/advice in terms of adhering to confidentiality/privacy policies.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Advanced Diploma of

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EVIDENCE GUIDE	
	Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Statistical analyses may include:	• correlation calculations • long-term trend analyses • probability assessment • regulation analyses • short to medium-term trend analyses
Sensitivity analyses means:	• applying 'what if' scenarios to available options
Management information systems means:	• formal systems for collecting, storing and synthesising information to be used in management decision making
Decision support systems are:	• management information systems which include some form of computer-based assistance to decision making (expert systems)
Risk management means:	• process of identification of potential negative events and the development of plans to mitigate or minimise the likelihood or consequences of the negative event if it occurs
Quantitative methods may include:	• dynamic programming • linear programming • queuing theory • simulation • transportation methodology
Relevant groups and individuals means:	• those personnel who have knowledge about the issue being dealt with and the expertise to assist the decision making process
Research may include:	• focus groups • group interviews • individual interviews • surveys
Communication plans means:	• structured program for the dissemination of information and the receipt of feedback information from individuals relevant to the process or activity

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RANGE STATEMENT	
Technology may include:	• audio-visual media • internet • intranet • print media • radio • telephone • television
Corporate knowledge may include:	• copyright • intellectual property • technology

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBINN301A Promote innovation in a team environment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to be an effective and pro active member of an innovative team. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies individuals who play a pro active role in demonstrating, encouraging or supporting innovation in a team environment. The individual may be a team participant or a team leader. The team may 'make itself' or be constructed by others. It may have core members and members who participate at certain times or for particular purposes. It may be permanent or temporary, or come together at different times to work on specific projects. The team could consist of a team of contractors/freelancers, permanent staff, clients and service providers, or any combination of these groups. It may operate within an organisation or across several organisations - or simply across a group of individuals. The key focus of the unit is on what makes for an innovative team, what keeps it working well, how the structure of work can make a difference and what skills and knowledge are needed to maximise opportunities for innovation. Where a greater focus on team leadership is required this unit should be combined with units such as BSBLED401A Develop teams and individuals.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Create opportunities to maximise innovation within the team	1.1. Evaluate and reflect on ***what the team needs and wants to achieve*** 1.2. Check out ***information about current or potential team members' work*** in the context of developing a more innovative team 1.3. Bring people into the team or make suggestions for team members based on what needs to be achieved and the potential for cross-fertilising ideas 1.4. Acknowledge, respect and discuss the ***different ways that different people may contribute*** to building or enhancing the team
2. Organise and agree effective ways of working	2.1. Jointly establish ***ground rules*** for how the team will operate 2.2. Agree and communicate responsibilities in ways that encourage and reinforce ***team-based innovation*** 2.3. Agree and share tasks and activities to ensure the best use of skills and abilities within the team 2.4. Plan and schedule activities to allow time for thinking, challenging and collaboration 2.5. Establish personal reward and stimulation as an integral part of the team's way of working
3. Support and guide colleagues	3.1. Model ***behaviour that supports innovation*** 3.2. Seek ***external stimuli and ideas*** to feed into team activities 3.3. Pro-actively share information, knowledge and experiences with other team members 3.4. Challenge and test ideas within the team in a positive and collaborative way 3.5. Pro-actively discuss and explore ideas with other team members on an ongoing basis
4. Reflect on how the team is working	4.1. De-brief and reflect on activities and on opportunities for improvement and innovation 4.2. Gather and use feedback from within and outside the team to generate discussion and debate 4.3. Discuss the ***challenges of being innovative*** in a constructive and open way 4.4. Take ideas for improvement, build them into future activities and communicate key issues to relevant colleagues 4.5. Identify, promote and celebrate successes and

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ELEMENT	PERFORMANCE CRITERIA
	examples of successful innovation

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to work collaboratively as part of a team, to provide guidance and support to others, and to participate in open and constructive discussions • creative thinking skills to generate, explore, test and challenge ideas • learning skills to stretch boundaries of own knowledge and skills • literacy skills to analyse a wide range of information from varied sources • planning and organisational skills to participate in the effective allocation of work in a team context • problem-solving skills to work constructively to overcome issues and challenges of both a practical and conceptual nature and to make ideas become realities • self-management skills to take a pro-active team role and to reflect on own performance in modelling and encouraging behaviour that supports innovation.
Required knowledge
• barriers to innovation that can occur within a team and broader barriers that sometimes hinder innovation • broad concepts of innovation including what innovation is, different types of innovation and the benefits of innovation • characteristics of teams that are more likely to be innovative and characteristics of broader environments that support and encourage innovation • different roles that people may play within a team, how this impacts on the way a team works and what it might achieve • group dynamics in a team.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • active participation in a team where the team takes a pro-active and considered approach to innovation and innovative practice • collaborative and open communication within the team • knowledge and understanding of the internal and external factors that contribute to a team becoming and remaining innovative.
Context of and specific resources for assessment	Assessment must ensure: • demonstration of skills as part of a team.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • direct observation of team interactions • evaluation of reports by the candidate or the team (could be oral or written) discussing the ideas, challenges and opportunities associated with teams, and how they can be more innovative • evaluation of feedback from other people in the team about the candidate's communication approaches and abilities • oral or written questioning to assess knowledge of the characteristics of innovative teams, innovation concepts more broadly and they ways in which innovation can be encouraged • review of jointly established 'groundrules' for how the team will operate.
Guidance information for assessment	Innovation does not occur in isolation. Holistic assessment with other units relevant to the industry sector, workplace and job role is highly recommended.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
What the team needs and wants to achieve may relate to:	• addressing particular customer feedback • conceiving and implementing a particular project • developing new services or products • generating ongoing ideas within the work unit • improving budgetary performance • improving or changing work conditions • new ideas that impact beyond the workplace (e.g. that have a broader social or community impact)
Information about current or potential team members' work may relate to:	• interests • lifestyle preferences • past jobs • technical strengths • work preferences • working styles
Different ways that different people may contribute may relate to individual strengths around:	• creating positive energy within the team • fundamental literacy strengths (e.g. particularly strong in visual literacy, written or spoken communication) • generating ideas • networks or spheres of influence • particular ways of thinking • powers of persuasion • problem-solving capacities • specific technical skills or knowledge
Ground rules may relate to:	• boundaries or lack of boundaries for team activities and ideas • confidentiality • copyright, moral rights or intellectual property • regularity of communication • key roles and responsibilities • time lines

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RANGE STATEMENT	
	• ways of communicating
Team-based innovation may be encouraged through:	• accessing training and learning opportunities • enough but not too much guidance and structure • equitable sharing of workload • follow-through with ideas • supportive communication
Behaviour that supports innovation may include being:	• collaborative • equitable • fair • fun • hardworking • reflective • responsible • sympathetic
External stimuli and ideas might be from:	• Australia or overseas • colleagues outside of the team • family and friends • internet • journals • networks or technical experts • other organisations
Challenges of being innovative may relate to:	• budgetary or other resource constraints • competing priorities • organisational culture • problems with breaking old patterns of behaviour or thinking • time pressures

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Creativity and Innovation - Innovation

Co-requisite units

Co-requisite units		

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BSBINN502A Build and sustain an innovative work environment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to create an environment that enables and supports the application of innovative practice. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals working in leadership or management roles in any industry or community context. The individual could be employed by the organisation, but may also be an external contractor, the leader of a cross organisation team or of a self formed team of individuals. The work group could be permanent or temporary in nature. The unit focuses on the skills and knowledge required to develop and implement a holistic approach to the integration of innovation across all areas of work practice. It also acknowledges the importance of wider contextual evaluation for potential innovations to ensure their value and benefit.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Lead innovation by example	1.1. Make innovation an integral part of ***leadership and management activities*** 1.2. Demonstrate positive reception of ideas from others and provide constructive advice 1.3. Establish and maintain relationships based on mutual respect and trust 1.4. Take considered ***risks*** to open up opportunities for innovation 1.5. Regularly evaluate own approaches for consistency with the wider organisational or project context
2. Establish work practices that support innovation	2.1. Consult on and establish ***working conditions*** that reflect and encourage innovative practice 2.2. Introduce and maintain ***workplace procedures*** that foster innovation and allow for rigorous ***evaluation of innovative ideas*** 2.3. Facilitate and participate in ***collaborative work arrangements*** to foster innovation 2.4. Build and lead teams to work in ***ways that maximise opportunities for innovation***
3. Promote innovation	3.1. Acknowledge suggestions, improvements and innovations from all colleagues 3.2. Find appropriate ***ways of celebrating and promoting innovation*** 3.3. Promote and reinforce the value of innovation according to the vision and objectives of the organisation or project 3.4. Promote and support the evaluation of innovative ideas within the wider organisational or project context
4. Create a physical environment which supports innovation	4.1. Evaluate the ***impact of the physical environment*** in relation to innovation 4.2. Collaborate with colleagues about ideas for enhancing the physical work environment before taking action 4.3. Consider potential for supporting innovation when selecting physical resources and equipment 4.4. Design, fit-out and decorate workspaces to encourage creative mindsets, collaborative working and the development of positive workplace relationships

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ELEMENT	PERFORMANCE CRITERIA
5. Provide learning opportunities	5.1. Pro-actively share relevant information, knowledge and skills with colleagues 5.2. Provide or encourage ***formal and informal learning opportunities*** to help develop the skills needed for innovation 5.3. Create opportunities in which individuals can learn from the experience of others

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication, consultation and negotiation skills to model and lead, open and collaborative relationships
- comprehension skills to interpret and develop information that may deal with complex ideas and relate to issues both within and outside a given workplace context
- planning and organisational skills to implement wide-ranging practical processes and procedures that support innovation
- problem-solving skills to assess and respond to challenges and risks around innovation at an operational management level
- self-management and learning skills to evaluate and enhance personal effectiveness, and to promote a culture of ongoing learning and development.

Required knowledge

- benefits of providing coaching and learning opportunities in relation to innovation
- concept of innovation, what it is and what it means for different people either working independently or within an organisation
- context for innovation in the relevant workplace context including core business values, overall objectives, broader environmental context and the need to ensure the value and benefit of innovative ideas and projects
- different ways of rewarding performance
- factors and tools that can motivate individuals to use creative thinking and apply innovative work practices
- legislative framework that impacts on operations in the relevant workplace context
- management principles and leadership styles, including the impact of different approaches on innovation
- typical challenges and barriers to innovation within teams and organisations, and ways of overcoming these
- ways in which workplace climate can affect individual attitudes and performance.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • establishment of procedures and practices (for a project or a workplace) which support and foster innovative work practice and include sound evaluation processes • modelling of behaviour that supports innovative work practice • knowledge and understanding of the role of leaders and managers in encouraging innovation, and the issues and challenges associated with building and sustaining an innovative work environment.
Context of and specific resources for assessment	Assessment must ensure: • involvement of a team for which the candidate provides leadership and guidance.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • evaluation of outcomes and processes from activities managed by the candidate, particularly in relation to how innovation and innovative practice was encouraged and supported • oral or written questioning to assess knowledge of ways that innovation can be fostered and the typical challenges and barriers to innovation.
Guidance information for assessment	Innovation does not occur in isolation. Holistic assessment with other units relevant to the industry sector, workplace and job role is highly recommended.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Leadership and management activities may include:	• people management practices • planning processes • regular management meetings • review processes
Risks may include:	• budgetary issues • challenging changes in relationships, work practices and general workplace climate • unforseen impacts of innovative ideas
Working conditions may include:	• family-friendly leave entitlements • flexible working hours • social leave • study leave • time provided for coming up with ideas
Workplace procedures may relate to:	• briefing processes • client relations • performance management • project management • staff meetings • training
Evaluation of innovative ideas may relate to:	• analysing consistency with overall goals, values or vision • assessing resource requirements and practicalities • assessing the potential to find 'champions' or supporters • evaluating the external factors that may impact on the idea • exploring the implications of ideas that may stretch or change existing ways of doing things
Collaborative work arrangements might be:	• cross section • vertical teams • within a section • working with supplier organisations or partner

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RANGE STATEMENT	
	organisations
Ways that maximise opportunities for innovation may relate to:	• collaborating • collecting data • creative thinking • future scanning • getting feedback • making suggestions • networking
Ways of celebrating and promoting innovation may include:	• congratulating the project team • ensuring management acknowledgment • providing a newsletter story about the idea • using the idea to help foster other ideas • well-planned group incentive schemes
Impact of the physical environment may relate to:	• eating areas • extent to which design or style links with declared philosophies or objectives • external areas • general ambience of the work environment • location of different people • presence and ambience of relaxation areas • style of dÃ©cor • use of creative messages or images in the workplace • workspace design and dÃ©cor • workstation arrangements and opportunities for interaction
Formal and informal learning opportunities may include:	• coaching • conferences • formal training courses/programs • information seminars • job rotation • mentoring • online learning

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Creativity and Innovation - Innovation

Co-requisite units

Co-requisite units		

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BSBITU101A Operate a personal computer

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to start up a personal computer or business computer terminal; to correctly navigate the desktop environment; and to use a range of basic functions. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals developing basic skills and knowledge of personal computer operation in preparation for working in a broad range of settings.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Start computer, system information and features	1.1. Adjust workspace, furniture and equipment to suit user ***ergonomic requirements*** 1.2. Ensure ***work organisation*** meets organisational and ***occupational health and safety*** (***OHS***) ***requirements*** for computer operation 1.3. Start computer or log on according to user procedures 1.4. Identify basic functions and features using system information 1.5. Customise desktop configuration, if necessary, with assistance from appropriate persons 1.6. Use help functions as required
2. Navigate and manipulate desktop environment	2.1. Open, close and access features by selecting correct ***desktop icons*** 2.2. Open, resize and close desktop windows by using correct window functions and roles 2.3. Create shortcuts from the desktop, if necessary, with assistance from appropriate persons
3. Organise files using basic directory and folder structures	3.1. Create folders/subfolders with suitable names 3.2. Save files with suitable names in appropriate folders 3.3. Rename and move folders/subfolders and files as required 3.4. Identify folder/subfolder and ***file attributes*** 3.5. Move folders/subfolders and files using cut and paste, and drag and drop techniques 3.6. Save folders/subfolders and files to ***appropriate media*** where necessary 3.7. Search for folders/subfolders and files using appropriate software tools 3.8. Restore deleted folder/subfolders and files as necessary
4. Print information	4.1. Print information from installed printer 4.2. View progress of print jobs and delete as required 4.3. Change default printer if installed and required
5. Shut down computer	5.1. Close all open applications 5.2. Shut-down computer according to user procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- literacy skills to identify work requirements, to comprehend basic workplace documents, to interpret basic user manuals and to proofread simple documents
- communication skills to identify lines of communication, to request advice, to effectively question, to follow instructions and to receive feedback
- problem-solving skills to solve routine problems in the workplace, while under direct supervision
- technology skills to use equipment safely while under direction, basic keyboard and mouse skills and procedures relating to logging on and accessing a computer
- basic typing techniques and strategies.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - OHS
- basic ergonomics of computer use
- main types and parts of computers, and basic features of different operating systems
- suitable file naming conventions.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • navigation and manipulation of the desktop environment within the range of assigned workplace tasks • knowledge of organisational requirements for simple documents and filing conventions • application of simple keyboard functions to produce documents with a degree of speed and accuracy relevant to the level of responsibility required.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of workplace documentation.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • demonstration of techniques • oral or written questioning to assess knowledge of computer operations and functions • review of shortcuts created • review of folders/subfolders created.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBITU102ADevelop keyboard skills • other general administration units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Ergonomic requirements may include:	• avoiding radiation from computer screens • chair height, seat and back adjustment • document holder • footrest • keyboard and mouse position • lighting • noise minimisation • posture • screen position • workstation height and layout
Work organisation may include:	• exercise breaks • mix of repetitive and other activities • rest periods • visual display unit (VDU) eye testing
Occupational health and safety requirements may include:	• OHS guidelines related to the use of the screen equipment, computing equipment and peripherals, ergonomic work stations, security procedures, customisation requirements • statutory requirements
Desktop icons include:	• directories/folders • files • network devices • recycle bin and waste basket
File attributes include:	• dates • size
Appropriate media may include:	• CDs • diskettes • local hard drive • other locations on a network • USB/ Flash/Thumb drives • zip disks

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Unit Sector(s)

Unit sector	

Competency field

Competency field	Information and Communications Technology - IT Use

Co-requisite units

Co-requisite units		

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BSBLED401A Develop teams and individuals

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to determine individual and team development needs and to facilitate the development of the workgroup. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals with a broad knowledge of learning and development who apply their skills in addressing development needs to meet team objectives. They may have responsibility to provide guidance or to delegate aspects of tasks to others.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine development needs	1.1. Systematically identify and implement ***learning and development needs*** in line with ***organisational requirements*** 1.2. Ensure that a learning plan to meet individual and group training and development needs is collaboratively developed, agreed to and implemented 1.3. Encourage individuals to self-evaluate performance and identify areas for improvement 1.4. Collect ***feedback on performance*** of team members from relevant sources and compare with established team learning needs
2. Develop individuals and teams	2.1. Identify learning and development program goals and objectives, ensuring a match to the specific knowledge and skill requirements of competency standards relevant to the industry 2.2. Ensure that ***learning delivery methods*** are appropriate to the learning goals, the learning style of participants, and availability of ***equipment and resources*** 2.3. Provide workplace learning opportunities, and ***coaching and mentoring assistance*** to facilitate individual and team achievement of competencies 2.4. Create development opportunities that incorporates a range of activities and support materials appropriate to the achievement of identified competencies 2.5. Identify and approve resources and time lines required for learning activities in accordance with organisational requirements
3. Monitor and evaluate workplace learning	3.1. Use feedback from individuals or teams to identify and implement improvements in future learning arrangements 3.2. Assess and record outcomes and performance of individuals/teams to determine the effectiveness of development programs and the extent of additional development support 3.3. Negotiate modifications to learning plans to improve the efficiency and effectiveness of learning 3.4. Document and maintain records and reports of competency according to organisational requirements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to receive and report on feedback, to maintain effective relationships and to manage conflict
- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities
- leadership skills to gain trust and confidence of clients and colleagues
- literacy skills to read, write and understand a variety of texts; and to edit and proofread documents to ensure clarity of meaning, accuracy and consistency of information
- negotiation skills to achieve mutually acceptable outcomes
- technology skills to support effective communication and presentation.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety (OHS)
- facilitation techniques to encourage team development and improvement
- organisational policies, plans and procedures
- career paths and competency standards relevant to the industry.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • identifying and implementing learning opportunities for others • giving and receiving feedback from team members to encourage participation in and effectiveness of team • creating learning plans to match skill needs • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of learning and development plans, policies and procedures • examples of documents relating to diversity policies and procedures.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • analysis of responses to case studies and scenarios • oral or written questioning to assess knowledge of career paths and competency standards relevant to the industry • review of records and reports of competency.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • management units • other learning and development units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Learning and development needs may include:	• career planning/development • coaching, mentoring and/or supervision • formal/informal learning programs • internal/external training provision • performance appraisals • personal study • recognition of current competence/skills recognition • work experience/exchange/opportunities • workplace skills assessment
Organisational requirements may include:	• access and equity principles and practices • anti-discrimination and related policy • business and performance plans • confidentiality and security requirements • defined resource parameters • ethical standards • goals, objectives, plans, systems and processes • legal and organisational policies, guidelines and requirements • OHS policies, procedures and programs • quality and continuous improvement processes and standards • quality assurance and/or procedures manuals
Feedback on performance may include:	• formal/informal performance appraisals • obtaining feedback from clients • obtaining feedback from supervisors and colleagues • personal, reflective behaviour strategies • routine organisational methods for monitoring service delivery
Learning delivery methods may include:	• conference and seminar attendance • formal course participation • induction

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RANGE STATEMENT	
	• involvement in professional networks • on-the-job coaching or mentoring • presentations/demonstrations • problem-solving • work experience
Equipment and resources may include:	• facilities • funding • guest speakers • technological tools and equipment • time • training equipment such as whiteboards and audio-visual equipment
Coaching and mentoring assistance may include:	• fair and ethical practice • non-discriminatory processes and activities • presenting and promoting a positive image of the collective group • problem-solving • providing encouragement • providing feedback to another team member • respecting the contribution of all participants and giving credit for achievements

Unit Sector(s)

Unit sector	

Competency field

Competency field	Workforce Development - Learning and Development

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Co-requisite units

Co-requisite units		

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BSBLED501A Develop a workplace learning environment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to encourage and support the development of a learning environment in which work and learning come together. Particular emphasis is on the development of strategies to facilitate and promote learning, and to monitor and improve learning performance. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to managers. All managers have a prominent role in encouraging, supporting and facilitating the development of a learning environment in which work and learning come together. At this level work will normally be carried out within complex and diverse methods and procedures, which require the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Create learning opportunities	1.1. Identify potential formal and informal ***learning opportunities*** 1.2. Identify ***learning needs*** of individuals in relation to the needs of the team and/or enterprise, and available learning opportunities 1.3. Develop and implement ***learning plans*** as an integral part of individual and team performance plans 1.4. Develop strategies to ensure that learning plans reflect the ***diversity of needs*** 1.5. Ensure organisational procedures maximise individual and team access to, and participation in, learning opportunities 1.6. Ensure effective liaison occurs with ***training and development specialists*** and contributes to learning opportunities which enhance individual, team and organisational performance
2. Facilitate and promote learning	2.1. Develop strategies to ensure that workplace learning opportunities are used and that team members are encouraged to share their skills and knowledge to ***encourage a learning culture*** within the team 2.2. Implement organisational procedures to ensure workplace learning opportunities contribute to the development of appropriate workplace knowledge, skills and attitudes 2.3. Implement policies and procedures to encourage team members to assess their own competencies, and to identify their own learning and development needs 2.4. Share the benefits of learning with others in the team and organisation 2.5. Recognise workplace achievement by timely and appropriate recognition, feedback and rewards
3. Monitor and improve learning effectiveness	3.1. Use strategies to ensure that team and individual learning performance is monitored to determine the type and extent of any additional work-based support required, and any occupational health and safety (OHS) issues 3.2. Use feedback from individuals and teams to identify and introduce improvements in future learning arrangements 3.3. Make adjustments, negotiated with training and

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ELEMENT	PERFORMANCE CRITERIA
	development specialists, for improvements to the efficiency and effectiveness of learning 3.4. Use processes to ensure that records and reports of competency are documented and maintained within the organisation's systems and procedures to inform future planning

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - deal with people openly and fairly
  - encourage colleagues to share their knowledge and skills
  - gain the trust and confidence of colleagues
  - use consultation skills effectively
- literacy skills to access and use workplace information
- planning and organisational skills to facilitate, promote and monitor learning by:
  - developing learning plans
  - establishing a workplace which is conducive to learning
  - evaluating the effectiveness of learning
  - identifying learning needs
  - negotiating learning arrangements with training and development specialists
  - selecting and using work activities to create learning opportunities
  - using coaching and mentoring to support learning.

Required knowledge

- management of relationships to achieve a learning environment
- principles and techniques involved in the management and organisation of:
  - adult learning
  - coaching and mentoring
  - consultation and communication
  - improvement strategies
  - leadership
  - learning environment and learning culture
  - monitoring and reviewing workplace learning
  - problem identification and resolution
  - record keeping and management methods
  - structured learning
  - work-based learning.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • methods for reviewing performance development needs and techniques for providing feedback on those needs • models for planning professional development • options available for professional development • knowledge of relationship management required to achieve a learning environment.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of performance in role plays • observation of presentations • oral or written questioning to assess knowledge of the principles and techniques involved in the management and organisation of adult learning • review of the development and implementation of learning plans • evaluation of how workplace achievement is recognised • review of processes used to record and report competency.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

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EVIDENCE GUIDE	
	• other units from the Diploma of Management.

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Range Statement

RANGE STATEMENT	
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Learning opportunities may include:	• structured learning activities conducted outside and within the workplace such as:
	  • accredited training through an independent organisation such as a state/territory OHS authority
	  • action learning
	  • short courses
	  • training through a Registered Training Organisation (RTO) leading to a nationally recognised Australian Qualifications Framework (AQF) qualification or Statement of Attainment
	  • workshops
	• workplace learning activities, that may also contribute to a recognised credential, such as:
	  • coaching
	  • exchange/rotation
	  • induction
	  • mentoring
	  • shadowing

Learning needs may include:	• developmental learning, for example the learning required to progress through an organisation and take on new tasks and roles • gaps between the competencies held by the employee, and the skills and knowledge required to effectively undertake workplace tasks
Learning plans may include:	• codes of conduct • key performance indicators • negotiated agreement with individual/s • OHS requirements • performance standards • team competencies

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RANGE STATEMENT	
	• team roles and responsibilities • work outputs and processes
Diversity of needs may include:	• learning needs that relate to social, cultural and other types of workplace diversity, such as the need for varied communication styles and approaches
Training and development specialists may be:	• internal • external
Encourage a learning culture may refer to:	• encouraging learning and sharing skills and knowledge across the work team and the wider organisation to develop competencies of individual team members and the team as a whole

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBMGT401A Show leadership in the workplace

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to work with teams and individuals, their standard of conduct and the initiative they take in influencing others. At this level, work will normally be carried out within routine and non routine methods and procedures which require the exercise of some discretion and judgement. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	Frontline management provides the first level of leadership within the organisation. This unit applies to people who are making the transition from being a team member, to taking responsibility for the work and performance of others. Frontline managers have a strong influence on the work culture, values and ethics of the teams they supervise. As such it is important that frontline mangers model good practice, professionalism and confidently represent their organisation.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Model high standards of management performance and behaviour	1.1. Ensure management performance and behaviour meets the organisation's requirements 1.2. Ensure management performance and behaviour serves as a positive role model for others 1.3. Develop and implement performance plans in accordance with organisation's goals and objectives 1.4. Establish and use key performance indicators to meet organisation's goals and objectives
2. Enhance organisation's image	2.1. Use ***organisation's standards and values*** in conducting business 2.2. Question, through established communication channels, standards and values considered to be damaging to the organisation 2.3. Ensure personal performance contributes to developing an organisation which has integrity and credibility
3. Make informed decisions	3.1. Gather and organise information relevant to the issue/s under consideration 3.2. Facilitate individuals and teams active participation in decision making processes 3.3. Examine options and assess associated risks to determine preferred course/s of action 3.4. Ensure decisions are timely and communicate them clearly to individuals and teams 3.5. Prepare plans to implement decisions and ensure they are agreed by relevant individuals and teams 3.6. Use ***feedback processes*** effectively to monitor the implementation and impact of decisions

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE This section describes the skills and knowledge required for this unit.
Required skills
• communication and presentation skills to represent the organisation, to explain its work to others and to model professionalism • decision making skills to demonstrate good judgement and follow through.
Required knowledge
• basic theory of group behaviour • leadership styles and concepts.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • articulation of organisational values and expectations of behaviour • instances where leadership and decision making have been demonstrated and which have led to positive changes in the workplace • knowledge of leadership styles and concepts.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace documents.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of performance in role plays • observation of presentations • review of performance plans • oral or written questioning to assess knowledge of leadership styles • evaluation of communication of expectations, roles and responsibilities • review of documentation examining options and assessing associated risks to determine preferred course/s of action.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Certificate IV in Frontline Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Organisation's standards and values will be:	• stated or implied by the way the organisation conducts its business
Feedback processes may be:	• formal or informal • from internal or external sources

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBMGT402A Implement operational plan

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to implement the operational plan by monitoring and adjusting operational performance, producing short term plans for the department/section, planning and acquiring resources and providing reports on performance as required. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	Frontline managers are actively engaged in planning activities to achieve the measurable, stated objectives of the team and the organisation. This key role is carried out to provide safe, efficient and effective products and services to customer satisfaction within the organisation's productivity and profitability plans. At this level, work will normally be carried out within routine and non routine methods and procedures, which require planning, evaluation, leadership and guidance of others.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Implement operational plan	1.1. Collate, analyse and organise details of ***resource requirements*** in consultation with ***relevant personnel***, ***colleagues and specialist resource managers*** 1.2. Implement ***operational plans*** to contribute to the achievement of organisation's performance/business plan 1.3. Identify and use ***key performance indicators*** (KPIs) to monitor operational performance 1.4. Undertake ***contingency planning*** and ***consultation processes*** 1.5. Provide assistance in the development and presentation of proposals for resource requirements in line with operational planning processes
2. Implement resource acquisition	2.1. Recruit and induct employees within ***organisation's policies***, ***practices and procedures*** 2.2. Implement plans for acquisition of physical resources and services within organisation's policies, practices and procedures and in consultation with relevant personnel
3. Monitor operational performance	3.1. Monitor ***performance systems and processes*** to assess progress in achieving profit/productivity plans and targets 3.2. Analyse and use budget and actual financial information to monitor profit/productivity performance 3.3. Identify unsatisfactory performance and take prompt action to rectify the situation according to organisational policies 3.4. Provide mentoring, coaching and supervision to support individuals and teams to use resources effectively, economically and safely 3.5. Present recommendations for variation to operational plans to the ***designated persons***/***groups*** and gain approval 3.6. Implement ***systems***, ***procedures and records*** associated with performance in accordance with organisation's requirements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- coaching and mentoring skills to provide support to colleagues
- literacy skills to access and use workplace information, and to prepare reports
- planning and organising skills to monitor performance and to sequence work of self and others to achieve planned outcomes.

Required knowledge

- principles and techniques associated with:
  - contingency planning
  - methods for monitoring and reporting on performance
  - monitoring and implementing operations and procedures
  - problem identification and methods of resolution
  - relevant budgeting and financial analysis, interpretation and reporting requirements
  - resource management systems at the tactical implementation level
  - resource planning and acquisition
  - tactical risk analysis including identification and reporting requirements.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • ability to monitor and adjust operational performance, produce short-term plans for the department or section, plan and acquire resources, and provide reports on performance as required • knowledge of principles and techniques associated with monitoring and implementing operations and procedures.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of documentation outlining contingency planning and consultation processes undertaken • demonstration of techniques in managing performance • evaluation of mentoring, coaching and supervision provided to support individuals and teams to use resources effectively, economically and safely.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Certificate IV in Frontline Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Resource requirements may refer to:	• goods and services to be purchased and ordered • human, physical and financial resources - both current and projected • stock requirements and requisitions
Relevant personnel, ***colleagues and specialist resource managers*** may include:	• colleagues and specialist resource managers • managers • occupational health and safety committees and other people with specialist responsibilities • other employees • people from a wide range of social, cultural and ethnic backgrounds, and people with a range of physical and mental abilities • supervisors
Operational plans may refer to:	• organisational plans • tactical plans developed by the department or section to detail product and service performance
Key performance indicators may refer to:	• measures for monitoring or evaluating the efficiency or effectiveness of a system, and which may be used to demonstrate accountability and to identify areas for improvements
Contingency planning may refer to:	• contracting out or outsourcing human resources and other functions or tasks • diversification of outcomes • finding cheaper or lower quality raw materials and consumables • increasing sales or production • recycling and re-use • rental, hire purchase or alternative means of procurement of required materials, equipment and stock • restructuring of organisation to reduce labour

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RANGE STATEMENT	
	costs • risk identification, assessment and management processes • seeking further funding • strategies for reducing costs, wastage, stock or consumables • succession planning
Consultation processes may refer to:	• mechanisms used to provide feedback to the work team in relation to outcomes of consultation • meetings, interviews, brainstorming sessions, email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual operational plans
Organisation's policies, practices and procedures may include:	• organisational culture • Standard Operating Procedures • organisational guidelines which govern and prescribe operational functions, such as the acquisition and management of human and physical resources • undocumented practices in line with organisational operations

Performance systems and processes may refer to:	• informal systems used by frontline managers for the work team in the place of existing organisation-wide systems
	• formal processes within the organisation to measure performance, such as:
	  • feedback arrangements
	  • individual and teamwork plans
	  • KPIs
	  • specified work outcomes

Designated persons/groups may include:	• other affected work groups or teams and groups designated in workplace policies and procedures • those who have the authority to make decisions and/or recommendations about operations such as workplace supervisors, other managers
Systems, procedures and records	• databases and other recording mechanisms for ensuring records are kept in accordance with

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RANGE STATEMENT	
may include:	organisational requirements • individual and team performance plans • organisational policies and procedures relative to performance

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBMGT403A Implement continuous improvement

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to implement the organisation's continuous improvement systems and processes. Particular emphasis is on using systems and strategies to actively encourage the team to participate in the process, monitoring and reviewing performance, and identifying opportunities for further improvements. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	Frontline managers have an active role in implementing the continuous improvement process to achieve the organisation's objectives. Their position, closely associated with the creation and delivery of products and services, means that they have an important role in influencing the ongoing development of the organisation. At this level, work will normally be carried out within routine and non routine methods and procedures, which require planning and evaluation, and leadership and guidance of others.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Implement continuous improvement systems and processes	1.1. Implement ***systems*** to ensure that individuals and teams are actively encouraged and supported to ***participate in decision making processes***, assume responsibility and exercise initiative 1.2. Communicate the organisation's ***continuous improvement processes*** to individuals and teams, and obtain feedback 1.3. Ensure effective ***mentoring and coaching*** allows individuals and teams to implement the organisation's continuous improvement processes
2. Monitor and review performance	2.1. Use the organisation's systems and ***technology*** to monitor and review progress and to identify ways in which planning and operations could be improved 2.2. Improve ***customer service*** through continuous improvement techniques and processes 2.3. Formulate and communicate recommendations for adjustments to those who have a role in their development and implementation
3. Provide opportunities for further improvement	3.1. Implement ***processes to ensure that team members are informed of savings and productivity/service improvements*** in achieving the business plan 3.2. Document work performance to aid the identification of further opportunities for improvement 3.3. Manage records, reports and recommendations for improvement within the organisation's systems and processes

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE This section describes the skills and knowledge required for this unit.
Required skills

• communication skills to:
  • coach and mentor team members
  • gain the commitment of individuals and teams to continuously improve
• innovation skills to design better ways of performing work.

Required knowledge

• principles and techniques associated with:
  • benchmarking
  • best practice
  • change management
  • continuous improvement systems and processes
  • quality systems.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • taking active steps to implement, monitor and adjust plans, processes and procedures to improve performance • supporting others to implement the continuous improvement system/processes, and to identify and report opportunities for further improvement • knowledge of principles and techniques associated with continuous improvement systems and processes.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to assess knowledge of principles and techniques associated with change management • review of how the organisation's continuous improvement processeswascommunicated to individuals and teams • review of documentation of work performance.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Certificate IV in Frontline Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Systems may refer to:	• forums, meetings • newsletters and reports • organisational policies and procedures • web-based communication devices
Participation in decision making processes may include:	• feedback in relation to outcomes of the consultative process • processes which ensures all employees have the opportunity to contribute to organisational issues
Continuous improvement processes may include:	• cyclical audits and reviews of workplace, team and individual performance • evaluations and monitoring of effectiveness • implementation of quality systems, such as International Standardization for Organization (ISO) • modifications and improvements to systems, processes, services and products • policies and procedures which allow the organisation to systematically review and improve the quality of its products, services and procedures • seeking and considering feedback from a range of stakeholders
Mentoring and coaching may refer to:	• providing assistance with problem-solving • providing feedback, support and encouragement • teaching another member of the team, usually focusing on a specific work task or skill
Technology may include:	• computerised systems and software such as databases, project management and word processing • telecommunications devices • any other technology used to carry out work roles and responsibilities

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RANGE STATEMENT	
Customer service may be:	• internal or external • to existing, new or potential clients
Processes to ensure that team members are informed of savings and productivity/service improvements may refer to:	• email/intranet, newsletters or other communication devices • newsletters and bulletins • staff reward mechanisms • team meetings

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBMGT502B Manage people performance

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage the performance of staff who report to them directly. Development of key result areas and key performance indicators and standards, coupled with regular and timely coaching and feedback, provide the basis for performance management. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to all managers and team leaders who manage people. It covers work allocation and the methods to review performance, reward excellence and provide feedback where there is a need for improvement. The unit makes the link between performance management and performance development, and reinforces both functions as a key requirement for effective managers. This is a unit that all managers/prospective managers who have responsibility for other employees should strongly consider undertaking.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Allocate work	1.1. Consult relevant groups and individuals on work to be allocated and resources available 1.2. Develop work plans in accordance with operational plans 1.3. Allocate work in a way that is efficient, cost effective and outcome focussed 1.4. Confirm ***performance standards***, ***Code of Conduct*** and work outputs with relevant teams and individuals 1.5. Develop and agree ***performance indicators*** with relevant staff prior to commencement of work 1.6. Conduct ***risk analysis*** in accordance with the organisational risk management plan and legal requirements
2. Assess performance	2.1. Design ***performance management*** and review processes to ensure consistency with organisational objectives and policies 2.2. Train participants in the performance management and review process 2.3. Conduct performance management in accordance with organisational protocols and time lines 2.4. Monitor and evaluate performance on a continuous basis
3. Provide feedback	3.1. Provide informal feedback to staff on a regular basis 3.2. Advise relevant people where there is poor performance and take necessary actions 3.3. Provide on-the-job coaching when necessary to improve performance and to confirm ***excellence in performance*** 3.4. Document performance in accordance with the organisational performance management system 3.5. Conduct formal structured feedback sessions as necessary and in accordance with organisational policy
4. Manage follow up	4.1. Write and agree performance improvement and development plans in accordance with organisational policies 4.2. Seek assistance from human resources specialists where appropriate 4.3. Reinforce excellence in performance through recognition and continuous feedback

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ELEMENT	PERFORMANCE CRITERIA
	4.4. Monitor and coach individuals with poor performance 4.5. Provide support services where necessary 4.6. Counsel individuals who continue to perform below expectations and implement the disciplinary process if necessary 4.7. ***Terminate*** staff in accordance with legal and organisational requirements where serious misconduct occurs or ongoing poor-performance continues

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to articulate expected standards of performance, to provide effective feedback and to coach staff who need development • risk management skills to analyse, identify and develop mitigation strategies for identified risks • planning and organisation skills to ensure a planned and objective approach to the performance management system.
Required knowledge
• relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination • relevant awards and certified agreements • performance measurement systems utilised within the organisation • unlawful dismissal rules and due process • staff development options and information.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • documented performance indicators and a critical description and analysis of performance management system from the workplace • techniques in providing feedback and coaching for improvement in performance • knowledge of relevant awards and certified agreements.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports • demonstration of techniques in providing feedback and coaching • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of work plans, performance indicators, risk analysis,performance management and review processes, performance improvement and development plans.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other management units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Performance standards mean:	• level of performance sought from an individual or group which may be expressed either quantitatively or qualitatively
Code of Conduct means:	• agreed (or decreed) set of rules relating to employee behaviour/conduct with other employees or an agreed (or decreed) set of rules relating to employee behaviour/conduct with other employees or customers
Performance indicators mean:	• measures against which performance outcomes are gauged
Risk analysis means:	• determination of the likelihood of a negative event preventing the organisation meeting its objectives and the likely consequences of such an event on organisational performance
Performance management means:	• in accordance with relevant industrial agreements • process or set of processes for establishing a shared understanding of what an individual or group is to achieve, and managing and developing individuals in a way which increases the probability it will be achieved in both the short- and long-term
Excellence in performance means:	• regularly and consistently exceeding the performance targets established while meeting the organisation's performance standards
Termination means:	• cessation of the contract of employment between an employer and an employee, at the initiative of the employer within relevant industrial agreements

Unit Sector(s)

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Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBMGT515A Manage operational plan

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to develop and monitor implementation of the operational plan to provide efficient and effective workplace practices within the organisation's productivity and profitability plans. Management at a strategic level requires systems and procedures to be developed and implemented to facilitate the organisation's operational plan. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to people who manage the work of others and operate within the parameters of a broader strategic and/or business plan. The task of the manager at this level is to develop and implement an operational plan to ensure that the objectives and strategies outlined in the strategic and/or business plan are met by work teams. However in some larger organisations operational plans may be developed by a strategic planning unit. At this level work will normally be carried out within complex and diverse methods and procedures, which require the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop operational plan	1.1. Research, analyse and document ***resource requirements*** and develop an operational plan in consultation with ***relevant personnel***, ***colleagues and specialist resource managers*** 1.2. Develop and/or implement ***consultation processes*** as an integral part of the operational planning process 1.3. Ensure details of the operational plan include the development of ***key performance indicators*** to measure organisational performance 1.4. Develop and implement ***contingency plans*** at appropriate stages of operational planning 1.5. Ensure the development and presentation of proposals for resource requirements is supported by a variety of information sources and seek specialist advice as required 1.6. Obtain approval for plan from relevant parties and ensure understanding among work teams involved
2. Plan and manage resource acquisition	2.1. Develop and implement strategies to ensure that employees are recruited and/or inducted within the organisation's human resources management policies and practices 2.2. Develop and implement strategies to ensure that physical resources and services are acquired in accordance with the ***organisation's policies***, ***practices and procedures***
3. Monitor and review operational performance	3.1. Develop, monitor and review performance systems and processes to assess progress in achieving profit and productivity plans and targets 3.2. Analyse and interpret budget and actual financial information to monitor and review profit and productivity performance 3.3. Identify areas of under performance, recommend solutions, and take prompt action to rectify the situation 3.4. Plan and implement systems to ensure that mentoring and coaching are provided to support individuals and teams to effectively, economically and safely use resources 3.5. Negotiate recommendations for variations to operational plans and gain approval from ***designated persons/groups***

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ELEMENT	PERFORMANCE CRITERIA
	3.6. Develop and implement systems to ensure that procedures and records associated with documenting performance are managed in accordance with organisational requirements

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to access and use workplace information and to write a succinct and practical plan • technology skills to use software to produce and monitor the plan against performance indicators • planning and organisational skills • coaching skills to work with people with poor performance • numeracy skills to allocate and manage financial resources.
Required knowledge
• models and methods for operational plans • budgeting processes • alternative approaches to improving resource usage and eliminating resource inefficiencies and waste.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development of an operational plan with details of how it will be implemented and monitored • knowledge of models and methods for operational plans.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of budgeting processes • review of operational plan, key performance indicators and contingency plans • evaluation of employee recruitment and induction strategies • evaluation of processes implemented to acquire physical resources and services.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Resource requirements may include:	• goods and services to be purchased and ordered • human, physical and financial resources - both current and projected • stock requirements and requisitions
Relevant personnel, ***colleagues and specialist resource managers*** may include:	• employees at the same level or more senior managers • managers • occupational health and safety committee/s and other people with specialist responsibilities • supervisors • union or employee representatives
Consultation processes may refer to:	• email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual operational plans • mechanisms used to provide feedback to the work team in relation to outcomes of consultation • meetings, interviews, brainstorming sessions
Operational plans may also be termed:	• action plans • annual plans • management plans • tactical plans
Key performance indicators may refer to:	• measures for monitoring or evaluating the efficiency or effectiveness of a system which may be used to demonstrate accountability and to identify areas for improvements
Contingency plans may include:	• contracting out or outsourcing human resources and other functions or tasks • diversification of outcomes • finding cheaper or lower quality raw materials

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RANGE STATEMENT	
	and consumables • increasing sales or production • recycling and re-using • rental, hire purchase or alternative means of procurement of required materials, equipment and stock • restructuring of organisation to reduce labour costs • risk identification, assessment and management processes • seeking further funding • strategies for reducing costs, wastage, stock or consumables • succession planning
Organisation's policies, ***practices and procedures*** may include:	• organisational culture • organisational guidelines which govern and prescribe operational functions, such as the acquisition and management of human and physical resources • Standard Operating Procedures • undocumented practices in line with organisational operations
Designated persons/***groups*** may include:	• groups designated in workplace policies and procedures • managers or supervisors whose roles and responsibilities include decision making on operations • other stakeholders such as Board members • other work groups or teams whose work will be affected by recommendations for variations

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBMGT516A Facilitate continuous improvement

Modification History

Not Applicable

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to lead and manage continuous improvement systems and processes. Particular emphasis is on the development of systems and the analysis of information to monitor and adjust performance strategies, and to manage opportunities for further improvements.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

This unit applies to managers who take an active role in managing the continuous improvement process in order to achieve the organisation's objectives. Particularly where managers are closely associated with the creation and delivery of products and services, they play an important part in influencing the ongoing development and betterment of the organisation.
At this level, work will normally be carried out within complex and diverse methods and procedures which require the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Lead continuous improvement systems and processes	1.1. Develop ***strategies*** to ensure that team members are actively encouraged and supported to participate in decision making processes, and to assume responsibility and exercise initiative as appropriate 1.2. Establish ***systems*** to ensure that the organisation's ***continuous improvement processes*** are communicated to all ***stakeholders*** 1.3. Develop effective mentoring and coaching processes to ensure that individuals and teams are able to implement and support the organisation's continuous improvement processes
2. Monitor and adjust performance strategies	2.1. Develop strategies to ensure that systems and processes are used to monitor ***operational progress*** and to identify ways in which planning and operations could be improved 2.2. Adjust and communicate strategies to all stakeholders according to organisational procedures
3. Manage opportunities for further improvement	3.1. Establish processes to ensure that team members are informed of outcomes of continuous improvement efforts 3.2. Ensure processes include ***documentation of work team performance*** to aid the identification of further opportunities for improvement 3.3. Consider areas identified for further improvement when undertaking future planning

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.
Required skills
• innovation and lateral thinking skills to design better ways for achieving work outcomes • leadership skills to gain the confidence and trust of others • communication skills to communicate opportunities for improvement, and to coach and mentor staff.
Required knowledge
• continuous improvement models • quality systems.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • examples of strategies and approaches to improve work outcomes or organisational functioning • methods for monitoring performance and customer service • knowledge of continuous improvement models.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to assess knowledge of quality systems • review of strategies developed to ensure that team members are actively encouraged and supported to participate in decision making processes, and to assume responsibility and exercise initiative • evaluation of how customer service strategies were communicated to all stakeholders • review of documentation outlining work team performance.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is

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	recommended, for example: • other units from the Diploma of Management.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Strategies may refer to:	• clarification of roles and expectations • communication devices and processes, such as intranet and email communication systems, to facilitate input into workplace decisions • long-term or short-term plans factoring in opportunities for team input • mentoring and 'buddy' systems to support team members to participate in decision making • performance plans • reward/recognition programs for high performing staff • training and development activities
Systems may refer to:	• forums, meetings • newsletters and reports • policies and procedures • web-based communication devices
Continuous improvement processes may include:	• cyclical audits and reviews of workplace, team and individual performance • evaluations and monitoring of effectiveness • modifications and improvements to systems, processes, services and products • policies and procedures which allow an organisation to systematically review and improve the quality of its products, services and procedures • seeking and considering feedback from a range of stakeholders
Stakeholders may include:	• business or government contacts • funding bodies • individuals within the work team • internal and external contacts • organisation's clients and customers • professional associations • senior management and board members • unions/employee groups

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Operational progress may refer to:	• customer service indicators • occupational health and safety indicators • productivity gains • success in meeting agreed goals and performance indicators
Documentation of work team performance may include:	• annotated performance plans • quantitative data such as production figures • recommendations for improvement • records and reports

Unit Sector(s)

Management and Leadership - Management

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BSBMGT605B Provide leadership across the organisation

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to demonstrate senior leadership behaviour, and personal and professional competence. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to senior managers who have a role in inspiring and motivating others to achieve organisational goals and to model professionalism in their organisation and industry. Leadership is seen in the context of the organisational mission. Business ethics are also addressed in this unit. The unit may relate equally to leadership of a small to medium sized organisation or to a business unit or area in a large organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Communicate organisational mission and goals	1.1. Clarify objectives, values and standards in accordance with organisation's strategic direction 1.2. Establish linkages between organisational objectives, values and standards and the responsibilities of relevant groups and individuals 1.3. Ensure media and language used is appropriate to individuals and group circumstances 1.4. State clear expectations of internal groups and individuals and explain in a manner which builds commitment to the organisation 1.5. Address ***expectations of the organisation*** 1.6. Investigate ***incidents*** promptly and communicate results clearly to relevant groups and individuals
2. Influence groups and individuals	2.1. Build trust, confidence and respect of diverse groups and individuals, through positive role modelling, and effective communication and consultation 2.2. Embrace, resource and effectively implement improvements to organisational and workplace culture 2.3. Demonstrate understanding of the global environment and new technology in work activities 2.4. Ensure actions convey flexibility and adaptability to change and accessibility 2.5. Ensure consultation and participation in decision making occurs with relevant groups and individuals where appropriate 2.6. Ensure decision making takes into account needs and expectations of both internal and external groups 2.7. Ensure decision making occurs in accordance with ***risk management*** plans for all options, and within appropriate timeframes 2.8. Ensure that the organisation is represented positively in the media and community
3. Build and support teams	3.1. Assign ***accountabilities and responsibilities*** to teams consistent with their competencies and operational plans 3.2. Ensure teams are resourced to allow them to achieve their objectives

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ELEMENT	PERFORMANCE CRITERIA
	3.3. Empower teams and individuals through effective delegation and support for their initiatives 3.4. Create and maintain ***a positive work environment*** 3.5. Encourage teams and individuals to develop innovative approaches to the performance of work
4. Demonstrate personal and professional competence	4.1. Model ethical conduct in all areas of work and encourage others to adopt business ethics 4.2. Adapt appropriate interpersonal and leadership styles to meet particular circumstances and situations 4.3. Set and achieve personal objectives and work program outcomes 4.4. Ensure self performance and professional competence is continuously improved through engagement in a range of professional development activities 4.5. Participate regularly in industry/professional networks and groups

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• interpersonal skills to communicate and inspire trust and confidence of others and to ensure their cooperation and support • networking skills to ensure support from key groups and individuals for concepts/ideas/products/services • risk management skills to analyse, identify and develop mitigation strategies for identified risks.
Required knowledge
• business ethics and their application • leadership styles and their application • legislation, codes and by-laws relevant to the organisation's operations • organisation mission, purpose and values • organisation objectives, plans and strategies • organisational change processes.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • input from a wide range of sources providing evidence in respect to a broad range of activities and application of business ethics • demonstration of personal competence that links to the organisation's requirements for managers • effective communication skills and an ability to win commitment to the organisation and its activities • knowledge of leadership styles and their application • knowledge of legislation, codes and by-laws relevant to the organisation's operations.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of demonstrated leadership techniques • observation of presentations • review of media and language used when communicating with individuals and groups • evaluation of accountabilities and responsibilitiesassigned to teams • review of documentation outlining personal objectives and work program outcomes • review of professional development activities undertaken to improve self performance and professional competence.
Guidance information for	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended,

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EVIDENCE GUIDE	
assessment	for example: • other units from the Advanced Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Expectations of the organisation include:	• environmental management • occupational health and safety • product safety • service • values and ethics • other relevant factors
Incidents may include:	• emergency response • environmental event (emissions, noise, etc.) • product failure • workplace accident
Risk management means:	• process of identification of potential negative events and the development of plans to mitigate or minimise the likelihood of the negative event occurring and/or the consequences in the event it does occur
Accountabilities and responsibilities means:	• clarification of who is to be accountable for a decision or action prior to its execution, and identification of groups, individuals and activities for which a person is responsible for managing
Positive work environment means:	• environment where employees identify with the organisation and its purpose and where communication is free-flowing, decisions are transparent and conflict is positive and constructive

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBMGT608B Manage innovation and continuous improvement

Modification History

Not Applicable

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to sustain and develop an environment in which continuous improvement, innovation and learning are promoted and rewarded.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

This unit applies to people who have managerial responsibilities which include building a better and more effective work environment. Continuous improvement and innovation have links with the model of the learning organisation and people working at this level play an important role in building the culture, values and attitudes of the organisation.
Links may be made between continuous improvement and formal quality systems such as International Standardization for Organization (ISO) or quality software. However it is not assumed that formal quality systems or software are in the workplace.
Innovation is seen as an important attitude and set of practices which should be fostered by people working at this level in teams and across the organisation.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Review programs, systems and processes	1.1. Establish strategies to monitor and evaluate performance of key systems and processes 1.2. Undertake detailed analyses of ***supply chains***, operational and product/service delivery systems 1.3. Identify performance measures, and assessment tools and techniques, and evaluate their effectiveness 1.4. Analyse ***performance reports*** and variance from plans for all key result areas of the organisation 1.5. Identify and analyse changing trends and opportunities relevant to the organisation 1.6. Seek advice from ***specialists***, where appropriate, to identify technology and electronic commerce opportunities
2. Develop options for continuous improvement	2.1. Brief groups on performance improvement strategies and innovation as an essential element of competition 2.2. Foster ***creative climate*** and ***organisational learning*** through the promotion of interaction within and between work groups 2.3. Encourage, test and recognise new ideas and entrepreneurial behaviour where successful 2.4. Accept failure of an idea during trialling, and recognise, celebrate and embed success into systems 2.5. Undertake ***risk management*** and ***cost benefit analyses*** for each option/idea approved for trial 2.6. Approve innovations through agreed organisational processes
3. Implement innovative processes	3.1. Promote ***continuous improvement*** as an essential part of doing business 3.2. Address impact of change and consequences for people, and implement ***transition plans*** 3.3. Ensure objectives, timeframes, measures and communication plans are in place to manage implementation

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	3.4. Implement ***contingency plans*** in the event of non-performance 3.5. Follow-up failure by prompt investigation and analysis of causes 3.6. Manage emerging challenges and opportunities effectively 3.7. Evaluate continuous improvement systems and processes regularly 3.8. Communicate costs and benefits of innovations and improvements to all relevant groups and individuals

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.
Required skills
• analytical skills to identify improvement opportunities in relation to the services/products delivered or concepts/ideas developed • flexibility and creativity skills to think laterally • leadership skills to foster a commitment to quality and an openness to innovation.
Required knowledge
• quality management and continuous improvement theories • creativity/innovation theories/concepts • risk management.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • documentation of consultation processes to introduce or evaluate an existing continuous improvement process or system, including suggested actions or an action plan • generation of an idea or concept which exhibits creative thinking and which offers the possibility of advantaging the organisation • how the concept or idea was introduced, tested and evaluated - the idea or concept does not have to have been shown to work or to be adopted by the business • knowledge of quality management and continuous improvement theories.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to assess knowledge of creativity/innovation theories/concepts • evaluation of strategies established to monitor and evaluate performance of key systems and processes • review of briefing of groups on performance improvement strategies and innovation

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	• review of documentation communicating costs and benefits of innovations and improvements to relevant groups and individuals.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Advanced Diploma of Management.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Supply chains includes:	• network of facilities that procures raw materials, transforms them into intermediate products (or services) and then finished goods (or services), and delivers them through a distribution system • procurement, production and distribution, which are viewed as being interlinked not as discrete elements
Performance reports may include:	• budget/cost variance • customer service • environmental • financial • occupational health and safety • quality • other operating parameters
Specialists refers to:	• those people inside and outside the organisation who are expert in the application of technology to process systems and procedures, relevant to the organisation's business
Creative climate means:	• climate of high motivation with extensive expertise, and deliberative and lateral thinking time to think through and test out ideas
Organisational learning refers to:	• extent to which groups and individuals within an organisation are given the opportunity to learn from each other and encouraged to share their learning
Risk management means:	• process of identification of potential negative events and the development of plans to mitigate or minimise the likelihood of the negative event occurring and/or the consequences in the event it does occur
Cost benefit analyses means:	• calculation to determine whether the results/outcomes of a particular course of action are sufficient to justify the costs and risks in taking that action

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Continuous improvement means:	• consistently reviewing what we do in search of a better way and improving the organisation in every aspect of its activities
Transition plan means:	• process of communication and education to help people through major change programs which impact on the way they do their work or them personally
Contingency plan means:	• plan which will deal with the uncertainty of a proposal and will come into operation in the event of a failure or non-conformance

Unit Sector(s)

Management and Leadership - Management

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BSBMGT616A Develop and implement strategic plans

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to establish the strategic direction of the organisation, and to sustain competitive advantage and enhance competitiveness. It requires analysis and interpretation of relevant markets, capability assessment of the organisation, and its existing and potential competitors and allies. It also covers implementation of the strategic plan. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals working in senior roles in the organisation, who have responsibility for ensuring that the organisation is positioned to ensure its long term viability and success. The unit covers the requirements for analysing the organisation's present position, and for developing specific actions and initiatives that will be undertaken by people working in various roles.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Confirm organisational vision and mission	1.1. Check with ***stakeholders*** that organisational vision and mission are still held to be current and are supported 1.2. Make any changes or refinements to vision or mission statement as required 1.3. Review or develop organisational values to support the vision and mission statement 1.4. Gain support for strategic planning process from all relevant stakeholders
2. Analyse the internal and external environment	2.1. Determine information requirements and undertake or commission ***research*** to deliver relevant information 2.2. Analyse political, economic, social, and technological developments in a ***global context*** 2.3. Seek advice from appropriate experts wherever necessary 2.4. Identify and consider strengths and weaknesses of existing and potential competitors and allies 2.5. Analyse organisation's strengths, weaknesses, opportunities and threats 2.6. Consider co-operative ventures that are supported by risk and cost-benefit analyses, are consistent with the organisational vision, mission and values, and provide for ***due diligence*** 2.7. Check that analysis of internal and external environment is consistent with the perspectives of other informed people
3. Write strategic plan	3.1. Document relevant research and background for inclusion in the strategic plan 3.2. Formulate strategic objectives and strategies needed for the future 3.3. Detail each strategy with an assigned priority, a timeframe, responsible parties and measurable performance indicators 3.4. Circulate strategic plan for comment, support and endorsement
4. Implement strategic plan	4.1. Communicate strategic plan to all relevant parties 4.2. Brief people with a specific role in relation to strategies 4.3. Use performance indicators to monitor progress in

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ELEMENT	PERFORMANCE CRITERIA
	implementing plan 4.4. Make necessary refinements to plan 4.5. Evaluate achievement of objectives at agreed milestones 4.6. Review effectiveness of plan and consider methods for improving strategic planning processes

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• analytical skills to undertake value chain analysis, to review strengths and weaknesses, and to collate and interpret statistical data including trend analysis • financial skills to consider resource implications of proposed strategies • research skills to ensure accurate, up-to-date information is available for the environmental analysis • risk management skills to plan and undertake appropriate due diligence.
Required knowledge
• relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination • strategic planning methodologies including political, economic, social and technological (PEST) analysis and strengths, weaknesses, opportunities and threats analysis (SWOT) • competitor knowledge • codes and by-laws relevant to the organisation's operations.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • thorough analysis of the organisation's own capabilities, those of their existing potential competitors and allies, and the external environment • strategic plan which includes objectives, strategies, timeframes, performance indicators and methods for monitoring the implementation of the plan • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to assess knowledge of strategic planning methodologies • review of documentation outlining strengths and weaknesses of existing and potential competitors and allies • review of strategies and their assigned priority, timeframe, responsible parties and performance indicators.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Advanced Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Stakeholders may include:	• Board • customers • employees • government agencies • owners • shareholders • technical advisers
Research may include:	• commissioned research • demographics • economics • internal research • market segmentation • political • product • social • technological
Global context means:	• examination on a world-wide basis of factors which may impact on the long-term strategic direction of the business
Due diligence means:	• process by which an investor, lawyer, auditor, or other qualified person, verifies the accuracy of data provided by another organisation

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBMGT617A Develop and implement a business plan

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to run a business operation and covers the steps required to develop and implement a business plan. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals who are running an organisation or who take a senior role in determining the effective functioning and success of the organisation. As such, they may oversee the work of a number of teams and other managers. Business plans are critical tools for business growth and development. They will vary depending on the needs of the organisation. This unit covers the typical elements of a business plan and the standard approaches to be used in implementing a business plan. The business plan should be supported by a strategic plan, and may also be supported by a marketing plan and cash flow forecasts.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop business plan	1.1. Review and evaluate pre-existing ***strategic***, ***business and operational plan***, if available 1.2. Analyse and interpret business vision, mission, values and objectives 1.3. Consult with ***key stakeholders*** 1.4. Review market requirements for the product or service, profile customer needs and research pricing options 1.5. Develop ***performance objectives and measures*** through consultation with key stakeholders 1.6. Identify financial, human and physical resource requirements for the business 1.7. Consider any permits or licences that may be required for new activity 1.8. Write ***business plan***
2. Monitor performance	2.1. Communicate business plan to all relevant parties and ensure understanding of performance requirements and timeframes 2.2. Ensure skilled labour is available to implement plan 2.3. Test performance measurement systems and refine, if necessary 2.4. Ensure timely reports on all key aspects of the business are available, user-friendly and balanced in terms of financial and non-financial performance 2.5. Report system failures, product failures and variances to the business plan as they occur
3. Respond to performance data	3.1. Analyse performance reports against planned objectives 3.2. Review performance indicators and refine if necessary 3.3. Ensure groups and individuals contributing to under-performance are ***coached***, and provide training where appropriate 3.4. Review system processes and work methods regularly as part of continuous improvement

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• analytical and research skills to review the market, to research competitors and to review pricing structures • coaching and communication skills to remediate any under-performance in the work group or individuals • planning and organising skills to sequence activities and to develop a logical structure.
Required knowledge
• performance measurement approaches and benchmarking • options for developing business plans.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • analysis of the strengths and weaknesses of a range of business plans • implementation of a business plan including evaluation of performance against documented indicators in key results areas • knowledge of performance measurement approaches and benchmarking.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports/examples of business plans and their outcomes • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of options for developing business plans • review of development of performance objectives and measures • review of how business plan was communicated to all relevant parties.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Advanced Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Strategic*, *business and operational plan may include:	• previously formulated:
	  • action plan
	  • business goals
	  • competitor analysis
	  • financing arrangements or financial targets
	  • management arrangements and/or personnel requirements
	  • marketing approaches
	  • product or service research or analysis

Key stakeholders may include:	• business partners or financiers • customers • shareholders • staff • technical experts or advisers
Performance objectives and measures may relate to:	• efficiency measures • input measures such as staff time or dollars allocated • outcomes measures • qualitative indicators such as feedback from customers, effect on the wider market or competitors, staff reports • quantitative indicators, such as numbers produced and sold, turnover, customer satisfaction ranking, lower staff turnover

Business plan includes:	• description of the business
	• business products and services
	• marketing activity
	• financial indicators
	• productivity and performance targets for key result areas such as:
	  • community awareness or branding
	  • environmental impact

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RANGE STATEMENT	
	• governance or management • quality • sales • triple bottom line • workforce
Coaching refers to:	• informal on-the-job and off-the-job advice and training to improve performance

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBOHS402B Contribute to the implementation of the OHS consultation process

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to contribute to the promotion of consultative arrangements in the workplace by communicating, influencing and consulting as part of a systematic approach to managing occupational health and safety (OHS). No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals with supervisory responsibilities for implementing and monitoring the organisation's OHS policies, procedures and programs in a work area. It addresses the formal and informal processes of ensuring people in the organisation are informed about OHS and have opportunities to effectively participate in OHS processes. This unit will involve working with individuals and working with groups.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Contribute to procedures to raise OHS issues or request information and data	1.1. Identify ***strategies and tools*** for individuals or groups to raise OHS issues or request information and data 1.2. Implement and communicate to ***stakeholders*** and ***interested parties*** procedures for individuals and groups to raise OHS issues or request information and data 1.3. Identify ***barriers*** to individuals or groups seeking OHS information and data or raising issues 1.4. Make recommendations to address any identified barriers
2. Contribute to procedures for communicating OHS information and data	2.1. Identify with stakeholders, needs for ***OHS information and data***, communication and consultation, including relevant ***legislative requirements*** 2.2. Provide information and data about OHS to key personnel on a regular basis, in a readily accessible manner and appropriate to the target group 2.3. Use formal and informal ***communication processes*** to provide information and data about OHS 2.4. Identify any barriers to individuals or groups gaining information and data about OHS 2.5. Make recommendations to address any identified barriers 2.6. Monitor and evaluate the effectiveness of actions taken to remove barriers to individuals or groups accessing information and/or data about OHS
3. Communicate OHS information, data and advice effectively to influence management decision making and action	3.1. Provide timely and appropriate OHS information, data and advice to stakeholder groups and individuals 3.2. Make OHS-related contributions in the form of ideas, information and solutions to influence management decision making and action 3.3. Use awareness of the organisation's cultural and industrial environments when dealing with OHS issues
4. Contribute to maintaining OHS arrangements	4.1. Provide support and advice to those involved in ***OHS consultative arrangements*** 4.2. Support the OHS issue resolution process to facilitate timely and equitable resolution of OHS

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ELEMENT	PERFORMANCE CRITERIA
	issues 4.3. Facilitate OHS consultative processes to meet legislative and workplace requirements 4.4. Monitor the effectiveness of OHS consultative and participative arrangements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- conflict management skills to address small disputes relating to OHS implementation issues
- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities across all levels of an organisation
- interpersonal skills to establish and build relationships with internal and external stakeholders
- literacy skills to prepare reports for a range of target groups
- organisational and time management skills to sequence tasks, meet timelines and run efficient formal and informal meetings
- technology skills to use a range of communication media.

Required knowledge

- internal and external sources of OHS information and data
- organisational policies and procedures for OHS
- legislative requirements for:
  - consultation and communication
  - information and data collection
  - notification of incidents
  - record keeping
  - reporting of incidents
- organisational policies and procedures for managing OHS in the workplace
- principles and practices of systematic approaches to managing OHS
- principles relating to:
  - hazard identification
  - hierarchy of control
  - risk management
  - systematic approaches to OHS
- range of communication strategies to communicate effectively with people at all levels of the organisation
- relevant state/territory and commonwealth OHS legislation, codes of practice and standards
- roles and responsibilities of personnel as specified in relevant OHS legislation
- sources of OHS data.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development and use of a product or products when contributing to the implementation of OHS processes • knowledge of relevant state/territory and commonwealth OHS legislation, codes of practice and standards.
Context of and specific resources for assessment	Assessment must ensure: • access to office equipment and resources • access to relevant legislation, standards, codes of practice and guidelines • access to workplace documentation access to workplace documentation and personnel.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • demonstration of techniques used to manage OHS in the workplace • demonstration of the application of OHS legislation in implementing a systematic approach to managing OHS • direct questioning combined with review of portfolios of evidence and third party reports of on-the-job performance by the candidate • observation of implementation of consultative techniques • observation of presentations • oral or written questioning to assess knowledge of communication strategies used to communicate effectively with people at all levels of the organisation • review of recommendations made to address any barriers to people raising OHS issues or requesting information and data

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EVIDENCE GUIDE	
	• evaluation of support and advice provided to people involved in OHS consultative arrangements.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other OHS units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Strategies and tools may include:	• employee meetings • hazard alerts • informal discussions with team members • input to safety audits, hazard identification and risk assessment processes • intranet or email systems • meetings with health and safety, and employee representatives • OHS committees • suggestion boxes and processes • surveys, checklists • toolbox meetings
Stakeholders may include:	• employees • health and safety, and other employee representatives • managers • OHS committees • supervisors
Interested parties may include:	• clients • community • contractors • visitors
Barriers may include:	• contractual arrangements • language • literacy and numeracy • shift work and rostering arrangements • specific needs of employees • timing of information provision • workplace culture related to OHS • workplace organisational structures (for example geographic, hierarchical)
OHS Information and data may	• access to training information and data • hazards that exist in the workplace

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RANGE STATEMENT	
include:	• manufacturers' manuals and specifications • OHS consultation and participation processes • OHS legislation, codes of practice and guidelines • rights and responsibilities • risk assessments • risk control strategies • safe work procedures • workplace OHS policies and procedures
Legislative requirements may include:	• freedom of information (FOI) legislation • OHS legislation, regulations and codes of practice • workplace equity, diversity and privacy legislation
Communication processes may include:	• audio-visual media, for example video • emails, letters, minutes, memos, reports • group and individual meetings • interviews • newsletters • noticeboards • photographs, maps and plans • signs, posters and brochures
OHS consultative arrangements may include:	• employee and supervisor involvement in OHS activities such as inspections and audits • employee and workgroup meetings • health and safety representatives, and other employee representatives • OHS and other consultative and planning committees • procedures for reporting hazards, and raising and addressing OHS issues

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Regulation, Licensing and Risk - Occupational Health and Safety

Co-requisite units

Co-requisite units		

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BSBOHS407A Monitor a safe workplace

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to implement and monitor the organisation's occupational health and safety (OHS) policies, procedures and programs in the relevant work area to meet legislative requirements. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to employees with supervisory responsibilities for implementing and monitoring the organisation's OHS policies, procedures and programs in a work area. This unit applies to individuals with a broad knowledge of OHS policies who contribute well developed skills in creating solutions to unpredictable problems through analysis and evaluation of information from a variety of sources. They provide supervision and guidance to others and have limited responsibility for the output of others.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Provide information to the workgroup about OHS policies and procedures	1.1. Accurately explain relevant provisions of ***OHS legislation and codes of practice*** to the workgroup 1.2. Provide information to the workgroup on the ***organisation's OHS policies***, ***procedures and programs***, ensuring it is readily accessible by the workgroup 1.3. Regularly provide and clearly explain information about ***identified hazards and the outcomes of risk assessment*** and control to the workgroup
2. Implement and monitor participative arrangements for the management of OHS	2.1. Explain the importance of effective consultative mechanisms in managing health and safety risks 2.2. Implement and monitor consultative procedures to facilitate participation of workgroup in management of work area hazards 2.3. Promptly deal with issues raised through consultation, in accordance with ***organisational consultation procedures*** 2.4. Promptly record and communicate to the workgroup the outcomes of consultation over OHS issues
3. Implement and monitor the organisation's procedures for providing OHS training	3.1. Systematically identify OHS training needs in line with organisational requirements 3.2. Make arrangements to meet OHS training needs of team members in consultation with relevant individuals 3.3. Provide workplace learning opportunities, and coaching and mentoring assistance to facilitate team and individual achievement of identified training needs 3.4. Identify and report to management the costs associated with providing training for work team, for inclusion in financial plans
4. Implement and monitor procedures for identifying hazards and assessing risks	4.1. Identify and report on hazards in work area in accordance with OHS policies and procedures 4.2. Promptly action team member hazard reports in accordance with organisational procedures
5. Implement and monitor the organisation's procedures for	5.1. Implement ***procedures to control risks*** using the hierarchy of controls and organisational requirements 5.2. Identify and report inadequacies in existing risk control measures in accordance with the hierarchy of

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ELEMENT	PERFORMANCE CRITERIA
controlling risks	controls 5.3. Monitor outcomes of reported inadequacies, where appropriate, to ensure a prompt organisational response
6. Implement and monitor the organisation's procedures for maintaining OHS records for the team	6.1. Accurately complete and maintain ***OHS records*** of incidents of occupational injury and disease in work area in accordance with OHS legal requirements 6.2. Use aggregate information and data from work area records to identify hazards and monitor risk control procedures in work area

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• analytical skills to identify hazards, to assess risks in the work area and to review data relating to monitoring and evaluating incidents (accidents), environmental issues and the effectiveness of risk control measures • literacy skills to comprehend documentation and to interpret OHS requirements • coaching and mentoring skills to provide support to colleagues.
Required knowledge

• key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  • anti-discrimination legislation
  • ethical principles
  • codes of practice
  • privacy laws
  • environmental issues
  • OHS
• legal responsibilities of employers, supervisors and employees in the workplace
• hazards and associated risks which exist in the workplace
• organisational policies and procedures relating to hazard management, fire, emergency, evacuation, incident (accident) investigating and reporting
• relevance of consultation as a key mechanism for improving workplace culture.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • applying organisational management systems and procedures to OHS within workgroup area • applying procedures for assessing and controlling risks to health and safety associated with those hazards, in accordance with the hierarchy of controls • providing specific, clear and accurate information and advice on workplace hazards to workgroup • knowledge of legal responsibilities of employers, supervisors and employees in the workplace.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of documentation relating to hazards in the work lace • examples of documents relating to workplace safety, hazard identification and risk assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of records communicating the outcomes of consultation over OHS issues to the workgroup • analysis of responses to case studies and scenarios • demonstration of techniques • review of reports to management on the costs associated with providing training for the work team • oral or written questioning to assess knowledge of workplace safety and hazards • examples of risk assessments • evaluation of actioning of team member hazard

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EVIDENCE GUIDE	
	reports • review of OHS records of occupational injury and disease incidents in work area.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • management units • other OHS units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
OHS legislation and codes of practice may include:	• common law duties to meet the general duty of care requirements • health and safety representatives and health and safety committees • prompt resolution of health and safety issues • provision of information, induction and training • regulations and approved codes of practice relating to hazards present in work area • relevant state/territory legislation • requirements for the maintenance and confidentiality of records of occupational injury and disease
Organisation's OHS policies, ***procedures and programs*** may include:	• consultative arrangements for employees in work area • dangerous goods transport and storage • emergency and evacuation procedures • first aid provision/medical practitioner contact and attention • hazard reporting procedures • hazardous substances use and storage • incident (accident) investigation • OHS arrangements for on site contractors, visitors and members of public • OHS audits and safety inspections • plant and equipment maintenance and use • procedures for hazard identification • procedures for risk assessment, selection and implementation of risk control measures • purchasing policy and procedures • safe operating procedures/instructions • site access • use and care of personal protective equipment

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RANGE STATEMENT	
Identified hazards and the outcomes of risk assessment may include:	• checking equipment before and during work • consulting work team members • daily informal employee consultation and regular formal employee meetings • housekeeping • OHS audits and review of audit reports • review of health and safety records including hazard reports, hazardous substances and dangerous goods registers, injury records • workplace inspections in area of responsibility
Organisational consultation procedures may include:	• attendance of health and safety representatives at management and OHS planning meetings • counselling/disciplinary processes • early response to employee suggestions, requests, reports and concerns put forward to management • election of health and safety representatives in accordance with legislative requirements • formal and informal meetings • health and safety committees • other committees, for example, planning and purchasing
Procedures to control risks may include:	• consultation with employees and their representatives • job/process/workplace re-design e.g. introduce mechanical handling equipment, re-arrange material flow/timing/scheduling, raise/lower work platforms • removing the cause of a risk at its source (eliminating the hazard) e.g. removing stored goods permanently from emergency exit passageways • selecting control measures in accordance with the hierarchy i.e. work through hierarchy from most effective to least effective control
OHS records may include:	• audit and inspection reports • consultation e.g. meetings of health & safety committees, workgroup meeting agendas including OHS items and actions • first aid/medical post records • hazardous substances registers • induction, instruction and training

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RANGE STATEMENT	
	• manufacturer's and supplier's information including dangerous goods storage lists • plant and equipment maintenance and testing reports • workers compensation and rehabilitation records • workplace environmental monitoring records

Unit Sector(s)

Unit sector	

Competency field

Competency field	Regulation, Licensing and Risk - Occupational Health and Safety

Co-requisite units

Co-requisite units		

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BSBOHS509A Ensure a safe workplace

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to establish, maintain and evaluate the organisation's occupational health and safety (OHS) policies, procedures and programs in the relevant work area in accordance with OHS legal requirements. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	Managers play an important role in ensuring the safety of the workplace and the wellbeing of their staff. This unit applies to managers working in a range of contexts. It takes a systems approach and ensures compliance with relevant legislative requirements. All those who have, or are likely to have, a management responsibility for OHS should undertake this unit. It is relevant for those with managerial responsibilities, either as an owner or employee-manager of a business.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish and maintain an OHS system	1.1. Locate and communicate OHS policies which clearly express the organisation's commitment to implement relevant ***OHS legislation*** in the enterprise 1.2. Define OHS responsibilities for all workplace personnel in accordance with OHS policies, procedures and programs 1.3. Identify and approve financial and human resources for the effective operation of the OHS system
2. Establish and maintain participative arrangements for the management of OHS	2.1. Establish and maintain participative arrangements with employees and their representatives in accordance with relevant OHS legislation 2.2. Appropriately resolve issues raised through participative arrangements and consultation 2.3. Promptly provide information about the outcomes of participation and consultation in a manner accessible to employees
3. Establish and maintain procedures for identifying hazards, and assessing and controlling risks	3.1. Develop procedures for ongoing hazard identification, and assessment and ***control of associated risks*** 3.2. Include hazard identification at the planning, design and evaluation stages of any change in the workplace to ensure that new hazards are not created by the proposed changes 3.3. Develop and maintain procedures for selection and implementation of risk control measures in accordance with the hierarchy of control 3.4. Identify inadequacies in existing risk control measures in accordance with the hierarchy of control and promptly provide resources to enable implementation of new measures 3.5. Identify intervention points for expert OHS advice
4. Establish and maintain a quality OHS management system	4.1. Develop and provide an OHS induction and training program for all employees as part of the organisation's training program 4.2. Utilise system for ***OHS record keeping*** to allow identification of patterns of occupational injury and disease in the organisation 4.3. Measure and evaluate the OHS system in line with the organisation's quality systems framework 4.4. Develop and implement improvements to the OHS

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ELEMENT	PERFORMANCE CRITERIA
	system to achieve organisational OHS objectives 4.5. Ensure compliance with the OHS legislative framework so that legal OHS standards are maintained as a minimum

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE This section describes the skills and knowledge required for this unit.
Required skills
• analytic skills to analyse relevant workplace data in order to identify hazards, and to assess and control risks • communication skills to consult with staff and to promote a safe workplace • problem-solving skills to deal with complex and non-routine difficulties • technology skills to store and retrieve relevant workplace data.
Required knowledge
• application of the hierarchy of control (the preferred order of risk control measures from most to least preferred, that is, elimination, engineering controls, administrative controls, personal protective equipment) • hazard identification and risk management • relevant legislation from all levels of government that affects business operation, especially in regard to OHS and environmental issues, equal opportunity, industrial relations and anti-discrimination • reporting requirements.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • detailed knowledge and application of all relevant OHS legislative frameworks • establishment and maintenance of arrangements for managing OHS within the organisations' business systems and practices • identification of intervention points for expert OHS advice • principles and practice of effective OHS management in a small, medium or large business.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports • demonstration of techniques • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of OHS policies, information provided on the OHS system, information about the outcomes of participation and consultation provided to employees • oral or written questioning to assess knowledge of OHS and OHS legislation • evaluation of OHS induction and training • review of OHS record keeping system.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other OHS units

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EVIDENCE GUIDE	
	• units from the Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
OHS legislation will depend on state/territory legislation and requirements, and will include:	• common law duties to meet general duty of care requirements • regulations and approved codes of practice relating to hazards in the work area • requirements for establishment of consultative arrangements including those for health and safety representatives, and health and safety committees • requirements for effective management of hazards • requirements for provision of information and training including training in safe operating procedures, procedures for workplace hazards, hazard identification, risk assessment and risk control, and emergency and evacuation procedures • requirements for the maintenance and confidentiality of records of occupational injury and disease
Control of associated risks may include:	• administrative • counselling/disciplinary processes • elimination • engineering • housekeeping and storage • issue resolution • OHS records maintenance and analysis • personal protective equipment • purchasing of supplies and equipment • workplace inspections including plant and equipment
Organisational health and safety record keeping may relate to:	• audit and inspection reports • workplace environmental monitoring records • consultation e.g. meetings of health & safety committees, work group meeting agendas

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RANGE STATEMENT	
	including OHS items and actions • induction, instruction and training • manufacturers' and suppliers' information including dangerous goods storage lists • hazardous substances registers • plant and equipment maintenance and testing reports • workers compensation and rehabilitation records • first aid/medical post records

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBOHS607B Advise on application of safe design principles to control OHS risk

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to advise on applying safe design principles to control occupational health and safety (OHS) risk during a product's life cycle. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	The central feature of safe design is the application of relevant information and data about human capabilities and behaviour to the design of objects, facilities, procedures and environments that people use. BSBOHS504B Apply principles of OHS risk management, and BSBOHS505C Manage hazards in the work environment, provide underpinning knowledge and skills for this unit. Knowledge of systematic approaches to managing OHS also underpins this unit.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Advise on the OHS requirements of the design process	1.1. Inform ***decision makers*** about their responsibility for the safety of downstream users and beneficiaries 1.2. Advise decision makers of their obligation under law to design and supply a safe designed product by eliminating OHS ***hazards*** and controlling for residual OHS risk 1.3. Promote OHS within the design requirements and include an overall risk evaluation of the designed product's life cycle 1.4. Source and make available to decision makers the most current information of OHS principles, materials, technology and systems for application in the design of the product 1.5. Identify and make available required education and training to enable decision makers to have the necessary skills and knowledge to identify and eliminate OHS hazards, and to control OHS risk in the design phase 1.6. Identify and access relevant ***sources of information and data***, for equipment users in particular 1.7. Consult potential users of the equipment during the design phase 1.8. Identify situations where ***specialist advisors*** may be required
2. Develop a systematic hazard identification and OHS risk evaluation system for safe design	2.1. Identify OHS hazards and conduct a ***risk analysis*** of associated risks across the ***life cycle*** of the designed product 2.2. Guide the selection and implementation of the most appropriate OHS risk controls for the designed product from a systematic analysis of the likelihood and consequences of injury or illness arising from exposure to identified OHS hazards 2.3. Ensure hazard identification and risk analysis includes potential alterations to the designed product during its life 2.4. ***Document decision making*** during the ***OHS risk evaluation*** process and make accessible to all parties 2.5. Establish a residual ***risk register***, recording OHS hazards not eliminated in the design together with possible control strategies, and distribute this information to those involved in the downstream or

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ELEMENT	PERFORMANCE CRITERIA
	subsequent life cycle stages 2.6. Monitor the design as it evolves to identify potential new OHS hazards and to manage risks if they become evident
3. Advise on principles of OHS risk control	3.1. Base design to minimise risk on the ***hierarchy of control*** 3.2. Minimise the impact of possible failure or defect, by ensuring the designed product includes fail-to-safe action
4. Advise on consultation processes between people involved in the life cycle of the designed product	4.1. Advise decision makers to consider the needs of the range of people who will use or interact with the designed product 4.2. Arrange consultation between all ***parties*** during the concept and detailed design phases to identify and eliminate OHS hazards and minimise risk 4.3. Appropriately communicate residual OHS risk in the designed product to those who will use or interact with the designed product throughout its life cycle
5. Advise on contractual arrangements and procurement systems to minimise 'purchased' OHS risk	5.1. Advise decision makers involved in ***purchasing and contractual arrangements*** to include a requirement to eliminate OHS hazards, minimise OHS risks, and provide information and data on residual OHS risk 5.2. Include an agreement to carry out a safe design approach in the ***design brief or draft specifications***

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to analyse relevant workplace information and data and to make observations of workplace tasks and interactions between people, their activities, equipment, environment and systems
- research skills to:
  - access relevant OHS information and data
  - use information and data gathering techniques such as brainstorming, polling, interviewing
- communication skills to:
  - conduct effective formal and informal meetings and to communicate effectively with personnel at all levels of the organisation, OHS specialists and, as required, emergency services personnel
  - use language and literacy skills appropriate to the workgroup and the task
  - prepare reports for a range of target groups including OHS committee, OHS representatives, managers, supervisors and other stakeholders
- project management skills to achieve continuous improvement and change
- organisational skills to manage own tasks within a timeframe
- information technology skills to access and enter internal and external information on OHS and to use a range of media
- attention to detail when making observations and recording outcomes

Required knowledge

- basic human cognitive and perceptual capabilities relevant to the design of human-machine interfaces
- basics of anthropometry and biomechanics
- difference between hazard and risk
- direct and indirect influences that impact on OHS and the environment in the design of product/s
- ethics related to professional practice
- formal and informal communication and consultation processes, and key personnel related to communication
- hierarchy of control and considerations for choosing between different control measures, such as possible inadequacies of particular control measures
- human error and implications for design of equipment, work practices and controlling ergonomic hazards
- how the characteristics and composition of the workforce impact on risk and the systematic approach to managing OHS, for example:
  - labour market changes

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REQUIRED SKILLS AND KNOWLEDGE
• structure and organisation of workforce e.g. part-time, casual and contract workers, shift rosters, geographical location • language, literacy and numeracy • communication skills • cultural background/workplace diversity • gender • workers with specific needs • interdependent relationships between ergonomics and workplace stressors such as psychosocial factors, occupational violence, shift work, repetitive work, awkward postures, lighting, thermal environment and work layout • internal and external sources of OHS information and data • key personnel, including identifying 'change agents', within workplace management structure • legislative requirements for OHS information and data, and consultation • organisational behaviour and culture as it impacts on OHS and on change • pertinent sections of relevant Australian and other standards such as AS/NZS 4360: 2004 Risk management, National Standard for the Storage and Handling Workplace Dangerous Goods [NOHSC: 1015(2001)] and National Standard for Manual Handling [NOHSC: 1001 (1990)] • principles and practices of a systematic approach to managing OHS

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • application of OHS risk controls within a collaborative safe design process • products developed for effective application of knowledge and skill in applying OHS risk controls in a safe design process • use of these products • knowledge of professional liability in relation to providing advice.
Context of and specific resources for assessment	Assessment must ensure: • access to reports from other parties consulted in developing appropriate interactions between people involved in the life cycle of the designed product • access to relevant legislation, standards and guidelines, research or industry data • access to workplace documentation.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • direct questioning combined with review of portfolios of evidence and third party reports of on-the-job performance by the candidate • demonstration of techniques used to apply principles to control OHS risk • observation of performance in role plays • observation of presentations • oral or written questioning to assess knowledge of direct and indirect influences that impact on OHS and the environment in the design of product/s • review of information made available in relation to OHS principles, materials, technology and systems for application in the design of the product • evaluation of consultation of potential users of the

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EVIDENCE GUIDE	
	equipment during the design phase • review of residual risk register established • assessment of decision making documented during the OHS risk evaluation process.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBOHS504B Apply principles of OHS risk management • BSBOHS505C Manage hazards in the work environment.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Decision makers may include:	• any party with influence over the specifications of the designed product including: • designer • client or commissioning agent • financier • manufacturer • supplier • purchaser • installer • user • insurer • importer • erector • maintainer • regulator • employees of these agents.
Hazards may include:	• source or situation with a potential for harm in terms of: • human injury or ill health • damage to property • damage to the environment • a combination of the above.
Sources of information and data may include:	• Australian and international anthropometric databases • commonwealth, state and territory OHS and other regulatory bodies • employer groups and unions • government and other advisory bodies such as Commonwealth Scientific and Industrial Research Organisation (CSIRO), National Health and Medical Research Council (NHMRC), Australian Consumers Association,

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RANGE STATEMENT	
	Australian Safety and Compensation Council • industry advisory bodies • international and Australian Standards, codes of practice and guidance material • professional associations such as Ergonomics Society of Australia, Engineers Australia, Safety Institute of Australia • research literature.
Specialist advisors may include:	• architects, interior designers and builders • building surveyors and certifiers • design professionals • drafts people, quantity surveyors and surveyors • engineers (such as design, acoustic, safety, mechanical, chemical, civil) • health professionals • insurers • legal practitioners • maintenance and trades personnel • manufacturers • occupational hygienists • specialist ergonomists • suppliers and distributors • technical professionals • workplace trainers and assessors.
Risk analysis may include:	• defining the range of consequences • assessing the effectiveness of existing controls • deciding the likelihood of each consequence • combining these is some way to obtain a level of risk.
Life cycle may include:	• design • construction/manufacture • supply/installation • use • maintenance/servicing • decommissioning/dismantling • disposal.
Documenting decision making may include:	• assumptions • description of consequences and their likelihood • effectiveness of existing controls

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RANGE STATEMENT	
	• factors affecting level of risk • further information and data, and investigation required • groups involved/consulted • information and data used in estimates • methods used • uncertainty in analysis.
OHS risk evaluation involves:	• comparison of risk with pre-established criteria for tolerance (or as low as reasonably achievable) and the subsequent ranking of risks requiring control

Risk register may include:	• list of the risks including:
	  • an indication of the likelihood of the consequence/s occurring
	  • possible consequence/s or outcome/s in terms of injury or damage
	  • scenarios or circumstances under which damage or injury may occur.

Hierarchy of control may include:	• eliminating the hazard • and where this is not practicable, minimising risk by: • substitution • isolating the hazard from personnel • using engineering controls • using administrative controls (e.g. procedures, training) • using personal protective equipment (PPE).
Parties may include:	• builder • commissioning agent • contractors • designer • disposer • importer • installer • maintenance agencies • manufacturer • supplier and/or distributor • user.
Purchasing and contractual arrangements may include:	• purchase order • specifications

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RANGE STATEMENT	
	• statement of work • supplier pre-qualification • tender documentation.
Design brief or draft specifications may include:	• form or outline of document for design brief • instructions • technical requirements or specifications for a designed product, structure, item, system or process.

Unit Sector(s)

Unit sector	

Competency field

Competency field	Regulation, Licensing and Risk - Occupational Health and Safety

Co-requisite units

Co-requisite units		

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BSBPMG405A Apply human resources management approaches

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to assist with aspects of human resources management of a project. This involves establishing human resource requirements, identifying the learning and development needs of people working on the project, facilitating these needs being met and resolving conflict within the team. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to a project team member working under the direction of a project manager with other project team members. The individual may be operating within an organisation or as a consultant. The skills should be applied in the context of multiple complex projects, with the individual operating as part of a specialist project management team. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assist with determining human resource requirements	1.1. Analyse ***work breakdown structure*** to determine human resource requirements 1.2. Assess skill levels of project personnel against project task requirements 1.3. Assign responsibilities for achieving project deliverables
2. Assist with human resource monitoring and stakeholder liaison	2.1. Monitor the work of project personnel against assigned roles and responsibilities 2.2. Track, monitor and control actual effort against plan, review skill levels against allocated tasks and recommend remedial action, where required, to ***others*** 2.3. Contribute to tracking, monitoring and controlling stakeholder participation and communication with the project 2.4. Advise others when assigned responsibilities are not met by project personnel, or stakeholder expectations are at variance 2.5. Undertake work in a multi-disciplinary environment in accordance with established human resource management ***practices***, ***plans***, ***guidelines and procedures*** to achieve designated project objectives 2.6. Resolve potential and actual conflicts in accordance with agreed dispute resolution processes or report to others for resolution 2.7. Offer ***human resource development opportunities*** to individuals with skill gaps
3. Contribute to evaluating human resource and stakeholder management practices	3.1. Contribute to assessing the overall effectiveness of project human resource management and document lessons learned 3.2. Report human resource issues to others to aid the continuous improvement process 3.3. Contribute to stakeholder satisfaction analysis and assist with post-project operational review

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to read and interpret project plans and schedules • planning and monitoring skills to track performance in relation to assigned tasks • teamwork and communication skills to resolve conflict, advise others of performance issues and deal with stakeholders.
Required knowledge
• job design principles and work breakdown structures • learning and development options • project roles, responsibilities and reporting requirements in relation to human resources.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • use of work breakdown structures in human resource project planning • use of effective methods for monitoring roles and responsibilities in multiple complex projects • knowledge of methods for providing feedback on performance and for improving performance of project team members.
Context of and specific resources for assessment	Assessment must ensure: • access to examples of project management documentation for human resource management.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following assessment methods are appropriate for this unit: • analysis of responses to case studies and scenarios which reflect human resource issues and problems in a project management context • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • analysis of responses addressing different project human resource management scenarios • oral or written questioning to assess knowledge of strategies for managing project human resources and their application to different situations • analysis of responsibilities assigned for achieving project deliverables • review of documentation about lessons learned • evaluation of reports developed about human resource issues.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Certificate IV in Project

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EVIDENCE GUIDE	
	Management.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Work breakdown structure is:	• a planning tool or process which divides and sub-divides the work of a project into smaller, more manageable work packages
Others may include:	• project manager • project specialists or other personnel • relevant project authority • team members
Practices, ***plans guidelines and procedures*** may include:	• industrial relations agreements and guidelines • organisation project management procedures • professional operating standards • project human resources management plan • skills framework nominating skill levels required for specific types of project activities • staffing plan/job description
Human resource development opportunities may include:	• action learning sets • coaching and mentoring • performance feedback • team building and group activities • training

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG408A Apply contract and procurement procedures

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to assist with contracting and procurement for a project. It covers identifying procurement and contract requirements, assisting with contractor selection, conducting contracting and procurement activities and assisting with finalisation of activities for the project. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

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Application of the Unit

Application of the unit	This unit applies to a project team member working under the direction of a project manager with other project team members. The individual may be operating within an organisation or as a consultant. The skills should be applied in the context of multiple complex projects, with the individual operating as part of a specialist project management team. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a worker managing a straightforward project or a section of a larger project where project management is not the main focus of the job role are covered by BSBPMG510A Manage projects. The functions performed by a project manager to manage procurement for the whole project are addressed in BSBPMG509A Manage project procurement.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assist with contract and procurement planning	1.1. Contribute to the establishment of procurement requirements 1.2. Act under ***delegated authority*** to contribute to the development of the procurement management plan 1.3. Contribute to the development of project documentation for contract definition and formation
2. Contribute to contractor selection process	2.1. Gather and evaluate information on potential suppliers 2.2. Make recommendations to assist in selection of preferred contractors 2.3. Provide contribution to the definition of agreed terms and conditions with preferred contractor/s 2.4. Assist with the development of the final tendering and contractual documentation
3. Conduct contracting and procurement activities	3.1. Undertake ***procurement activities*** and maintain information so that reporting, confidentiality and audit requirements are met 3.2. Receive, reconcile and register supplies in accordance with established procedures to facilitate payment throughout project 3.3. Monitor and control contractors and suppliers and their activities for compliance with designated responsibilities, deliverables, time/cost and quality conformance and other requirements
4. Conduct finalisation activities	4.1. Test and accept supplies to ensure quality and suitability for purpose 4.2. Provide assistance in the ongoing ***review*** of project outcomes using available ***records*** and information to determine the effectiveness of contracting and procurement activities 4.3. Report contracting and procurement management issues and responses to ***others*** for application in future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE This section describes the skills and knowledge required for this unit.
Required skills
• organisational skills to participate in contract and procurement management • literacy skills to read and interpret contracts and procurement documentation • interpersonal skills to communicate effectively with contractors and suppliers about contract performance and obligations.
Required knowledge
• contract and procurement management framework as applied to project management • project procurement and contract management tools and techniques • broad legal contractual obligations of each party.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • application of procurement and contract management techniques in relation to multiple complex projects • knowledge of the place and role of procurement in the project life cycle.
Context of and specific resources for assessment	Assessment must ensure: • access to examples of project contract and procurement documentation • access to records of project team participation in procurement tasks and activities.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following assessment methods are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • analysis of responses addressing different case studies and scenarios which present issues and problems in procurement • oral or written questioning to assess knowledge of strategies for project procurement and contracting and their application to different situations • review of procurement and contract management plans and other documentation associated with procurement processes • evaluation of information gathered on potential suppliers • assessment of recommendations made to assist in selecting preferred contractors • assessment of reports produced about contracting and procurement management issues.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

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EVIDENCE GUIDE	
	• other units from the Certificate IV in Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Delegated authority means:	• subject to frequent change in a multi-disciplinary environment • under limited guidance and supervision • within agreed authorisation and limits • within established organisational framework, procedures and routines
Procurement activities may include:	• conducting transfer and disposal actions • confirming details and obtaining additional information about quotes etc. • formally receipting goods and services or providing formal notice of delivery of goods and services • identifying occupational health and safety (OHS) issues • liaising with client, contractors, sub-contractors and other stakeholders • maintaining registers and lists • obtaining approvals from higher project authorities • obtaining quotes from potential suppliers, providing quotes to potential clients or collaborating agencies and alliances • planning, specifying and/or conducting test and acceptance procedures • processing payment documentation
Reviews may include evaluations of:	• agreed major milestones, for example phases and sub-contracts • changes of key personnel • delivery of major deliverables • finalisation of project and other agreed milestones
Records may include:	• assets and disposal actions • lists of suppliers • procurement logs, registers

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RANGE STATEMENT	
	• procurement reports • records of contract planning, formation, negotiation or administration • quotes, invoices and receipts • test and acceptance results
Others may include:	• higher project authorities • project manager • project specialists or personnel • team members

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG501A Manage application of project integrative processes

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to integrate and balance the overall project management functions of scope, time, cost, quality, human resources, communications, risk and procurement; and to align and track the project objectives to comply with organisational goals, strategies and objectives. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

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Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or as an external consultant. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a program manager to manage the integration of all functions of project management in a program or multiple project are addressed in BSBPMG601A Direct the integration of projects.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Manage integration of all functions of project management	1.1. Identify project stakeholders and their interests, with guidance of higher project authority 1.2. Analyse all ***project management functions*** with higher project authority and relevant stakeholders to determine achievable project objectives 1.3. Develop a ***project plan*** to integrate all project management functions to achieve outcomes and requirements for time, cost, quality and risk 1.4. Obtain endorsement of project plan by higher project authority 1.5. Establish designated mechanisms to control planned activity
2. Coordinate internal and external environments	2.1. Manage the project within an established ***internal working environment*** to ensure work is conducted effectively throughout the project 2.2. Maintain established links to align project objectives with organisation objectives throughout the project life cycle 2.3. Seek assistance, where necessary, from higher project authority to resolve conflicts which may negatively affect project objectives
3. Implement project activities throughout life cycle	3.1. Ensure agreed project phases, approval points and review points occur 3.2. Report progress against established project baselines to measure performance throughout the project life cycle 3.3. Implement established ***finalisation plans***, ***procedures and activities*** 3.4. Identify and document ***integration management issues and recommended improvements***, and pass on to higher project authority for application to future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to write project plans, progress reports and project communications • teamwork and communication skills to lead the project team and deal with stakeholders • time management skills to ensure priorities are addressed • planning and organising skills to manage the integration of project activities
Required knowledge
• project life cycle • role and responsibilities of the project manager • project planning tools and techniques.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development of project plans for multiple complex projects • details of how plans were monitored and outcomes were reported • knowledge of project life cycle.
Context of and specific resources for assessment	Assessment must ensure: • access to project documentation relevant to project integration • access to feedback from project stakeholders.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project integration and their application to different situations • analysis of responses addressing case studies and scenarios which present project integration management issues and problems • assessment of project reports and examples of project plans.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
The nine ***project management functions*** are:	• communications • cost • human resources • procurement and contracting • project integration • quality • risk • scope • time
Project plan may include:	• covering document which integrates the requirements of the nine functions of project management using appropriate formats and procedures • single document • multiple documents
Internal working environment may include:	• arrangement of project personnel and equipment • identity and differentiation of the project within the larger environment • personal working conditions • physical location of project • team dynamics
Finalisation plans, ***procedures and activities*** may include:	• final audit/reconciliation • finalisation of account codes and other financial documentation • forwarding finalisation report to senior personnel • project evaluation • settling of financial liabilities • transferring of assets to client or originating owner • transition of responsibility/ownership of project deliverables/products

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RANGE STATEMENT	
	• warranty requirements
Integration management issues and recommended improvements may include:	• evaluation using established success and failure criteria • knowledge management • lessons learned • records • training programs

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG502A Manage project scope

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to determine and manage project outcomes. It covers project authorisation, developing a scope management plan, and managing the application of project scope controls. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or as an external consultant. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a program manager to manage project scope within multiple projects are addressed in BSBPMG602A Direct the scope of a project program.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Conduct project authorisation activities	1.1. Develop and confirm procedures for ***project authorisation*** with an ***appropriate authority*** as the basis for future project management activity and the commitment of resources and effort 1.2. Obtain authorisation to expend resources
2. Conduct project scope definition activities	2.1. Identify project objectives, ***deliverables***, constraints, exclusions, assumptions and principal work activities 2.2. Establish measurable project benefits and outcomes to enable evaluation of project performance 2.3. Establish agreement to a shared understanding of desired project outcomes with ***relevant stakeholders*** 2.4. Develop and implement scope management plan
3. Manage application of scope controls	3.1. Implement agreed ***scope management*** procedures and processes 3.2. Manage the impact of scope changes within established time, cost and quality constraints according to ***change control procedures*** and to meet project objectives 3.3. Review progress and record results to assess the effectiveness of scope management procedures 3.4. Identify and document scope management issues and recommended improvements, and pass on to higher authority for application to future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills sufficient to interpret and analyse complex project plans and documentation • planning and organising skills to monitor scope and to respond to potential and actual changes • problem-solving and analytical skills to address project scope management issues and challenges • negotiation skills to address changes to scope with a range of stakeholders.
Required knowledge
• role and responsibilities of the project manager in relation to project planning • project life cycle and the significance of scope management • problem areas likely to be encountered in scope management • project management tools used for managing scope.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstration of scope management for multiple complex projects • knowledge of scope management plans, tools, issues and likely challenges.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace documentation used to document and manage project scope • consideration of feedback from project stakeholders regarding the management of project scope.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project scope and their application to different situations • analysis of responses in addressing case studies and scenarios which present project scope management issues and problems • observation of demonstrated techniques in negotiating changes to scope • review of scope management plan • assessment of documentation about scope management issues and recommended improvements.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Project authorisation may:	• already have been decided before involvement of the project manager • be in the form of a scope statement which briefly explains why the project has been formed, what it hopes to achieve and how success will be measured • be required at a number of critical review points during the project
Appropriate authority may include:	• client, owner, sponsor, senior executive or other individual or group vested with the authority to make decisions regarding the project
Project ***deliverables*** may include:	• all products and services defined within the project scope
Relevant stakeholders may include:	• team members • clients • sponsors • internal and external parties • decision makers
Scope management may include:	• determining that a scope change has occurred or is about to occur • identifying and reporting scope creep, that is, incremental increases to scope that were not part of the original project requirements • identifying factors which influence changes to scope • implementing agreed scope changes • monitoring and reporting the effect of scope changes on other areas and on achievement of project objectives • refining scope progressively throughout the project life cycle • seeking authorisation for changes to project scope

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RANGE STATEMENT	
Change control procedures may include:	• formal agreements, for example contracts, sub-contracts, memoranda of understanding • major elements of the project liable to change, for example design, engineering, finance • project documentation, including plans, schedules, statements, directives, guidelines and instructions

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG503A Manage project time

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage time within projects. It covers determining and implementing the project schedule, and assessing time management outcomes. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or as an external consultant. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a program manager to manage time within multiple projects are addressed in BSBPMG603A Direct time management of a project program.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine project schedule	1.1. Determine the duration, effort, sequence and dependencies of tasks from the scope definition as the basis for the project schedule 1.2. Obtain input and approval for the project schedule from stakeholders 1.3. Select and use ***methods***, ***techniques and tools***, within delegated authority, to determine preferred schedule, ***time management plan/s***, resource allocation and financial requirements 1.4. Obtain agreement to the schedule from relevant project authority and communicate this agreement to stakeholders to provide the basis for measurement of progress
2. Implement project schedule	2.1. Implement mechanisms to measure, record and report progress of activities in relation to the agreed schedule and plans 2.2. Conduct ongoing analysis of options to identify variances and to forecast the impact of changes to the schedule 2.3. Review progress throughout the project life cycle and implement agreed schedule changes to ensure consistency with changing scope, objectives and constraints related to time and resource availability 2.4. Develop responses to perceived, potential or actual schedule changes, ensure agreement by a higher project authority, and implement to maintain project objectives
3. Assess time management outcomes	3.1. Review project outcomes from available ***records*** and information to determine the effectiveness of time management activities 3.2. Identify and document time management issues and recommended improvements, and pass on to relevant project authority for application in future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to read, develop and interpret project schedules • self management skills to ensure vision and priorities are clear • organisational skills to sequence tasks and see that objectives are met • communication skills to convey expectations and to advise others of progress • technology skills to use appropriate software to develop project schedules • analytical skills to review and evaluate process.
Required knowledge
• techniques and tools for project schedules • project life cycle • time management methodologies, their capabilities, limitations, application and outcomes.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated successful application of time management tools and techniques to ensure objectives are met on multiple complex projects • knowledge of time management methodologies, their capabilities, limitations, application and outcomes.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace documentation, schedules, reports from project team • consideration of feedback from project stakeholders regarding the management of project time.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project time and their application to different situations. • analysis of responses in addressing case studies and scenarios which present project time management issues and problems • review of progress throughout project life cycle; and review of implementation of agreed schedule changes • assessment of documented time management issues and recommended improvements.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Methods, ***techniques and tools*** may include:	• conducting or supervising qualitative and/or quantitative time analysis, such as schedule simulation, decision analysis, contingency planning and alternative strategy development • using personal experience and/or subject matter experts • using specialist time analysis tools to assist in the decision making process
Time management plan/s may include:	• lists of milestones • project schedule and sub-schedules • schedule management strategies and actions, standardised formal arrangements, responsibility assignment, contingency plans and assigned schedule management responsibilities
Records may include:	• diaries, incident logs, occurrence reports and other such records • gantt, PERT and other scheduling charts • lists of variances and forecasts of potential schedule events • project and/or organisation files and records • records of analysis, evaluation of options, recommended and approved courses of action

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG504A Manage project costs

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to identify, analyse and refine project costs to produce a budget, and to use this budget as the principal mechanism to control project cost. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

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Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or an external consultant. In the context of this unit a complex project is defined as a project which involves: the need for a comprehensive and multi-faceted project plan the need for a formal internal or external communications strategy a dedicated and diverse project budget multiple administrative components multiple operational components a wide range of stakeholders a project operations team. The functions performed by a program manager to manage costs within multiple projects are addressed in BSBPMG604A Direct cost management of a project program.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine project costs	1.1. Determine resource requirements for individual tasks, with input from stakeholders and guidance of ***others*** 1.2. Estimate ***project costs*** to enable budgets to be developed and implement agreed cost management processes 1.3. Develop and implement a cost management plan, within ***delegated authority***, to ensure clarity of understanding and ongoing management of project finances
2. Monitor and control project costs	2.1. Implement agreed ***financial management processes and procedures*** to monitor actual expenditure and to control costs 2.2. Select and use cost analysis methods and tools to identify cost variations, evaluate options and recommend actions to a higher project authority 2.3. Implement, monitor and modify agreed actions to maintain financial and overall project objectives throughout the project lifecycle
3. Conduct financial completion activities	3.1. Conduct appropriate activities to signify financial completion 3.2. ***Review*** project outcomes using available ***records*** and information to determine the effectiveness of cost management processes and procedures 3.3. Review cost management issues and identify improvements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• numeracy and budgeting skills to monitor expenditure and manage costs • technology skills to use software for recording expenditure and reporting on finances • analytical skills to evaluate processes and recommend improvements.
Required knowledge
• budgeting processes, tools and techniques • methods and tools for costing and cost analysis.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated evidence of monitoring project costs across the project life cycle for multiple complex projects • knowledge of budgeting processes, tools and techniques.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace documentation including budgets, financial documents • consideration of feedback from project stakeholders on how costs were managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project costs and their application to different situations. • analysis of responses addressing case studies and scenarios which present project cost management issues and problems • review of developed and implemented cost management plan • review of documentation about project outcomes, cost management issues and identified improvements.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Others may include:	• relevant project authority • program manager • project specialists or other personnel • team members
Project costs are estimated to a level of accuracy available considering:	• availability of information at the time • contingencies to allow for identified risks and uncertainty • organisational requirements, for example overhead and profit margin • stage of the project life cycle
Delegated authority means that activities will:	• be conducted routinely or as changing circumstances dictate • be done independently within broad guidance or by taking the lead of a team • involve consultation with other project members, teams and internal stakeholders • involve the selection, use and supervision of appropriate time management methods, tools and techniques • take into account internal organisational change and external environmental change
Financial management processes and procedures may include:	• approval processes • communication and reporting processes • financial authorisations/delegations • invoice procedures
Reviewing may include evaluations of:	• agreed major milestones, for example phases and sub-contracts • change of key personnel • delivery of major deliverables • finalisation of project and other agreed milestones
Records may include:	• budgets, commitment and expenditure • cost management lessons learned

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RANGE STATEMENT	
	• cost management plans • invoice and payment summaries • lists of potential costs • project and/or organisation files and records • recommended and approved courses of action • reports to relevant stakeholders

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG505A Manage project quality

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage quality within projects. It covers determining quality requirements, implementing quality assurance processes, and using review and evaluation to make quality improvements in current and future projects. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or an external consultant. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a program manager to manage quality within multiple projects are addressed in BSBPMG605A Direct quality management of a project program.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine quality requirements	1.1. Determine ***quality objectives***, standards and levels, with input from stakeholders and guidance of a higher project authority, to establish the basis for quality outcomes and ***a quality management plan*** 1.2. Select and use established ***quality management methods***, ***techniques and tools*** to determine preferred mix of quality, capability, cost and time 1.3. Identify quality criteria, obtain agreement from a higher project authority and communicate to stakeholders, to ensure clarity of understanding and achievement of quality and overall project objectives 1.4. Include agreed quality requirements in the project plan and implement as basis for performance measurement
2. Implement quality assurance processes	2.1. Measure and document results of project activities and product performance throughout the project life cycle to determine compliance with agreed quality standards 2.2. Identify causes of unsatisfactory results, in consultation with client, and recommend appropriate actions to a higher project authority to enable continuous improvement in quality outcomes 2.3. Conduct inspections of quality processes and ***quality control*** results to determine compliance of quality standards to overall quality objectives 2.4. Maintain a quality management system to enable effective recording and communication of quality issues and outcomes to a higher project authority and stakeholders
3. Implement project quality improvements	3.1. Review processes and implement agreed changes continually throughout the project life cycle to ensure continuous quality improvement 3.2. Review project outcomes against performance criteria to determine the effectiveness of quality management processes and procedures 3.3. Identify and document lessons learned and recommended ***improvements***, and pass on to higher project authority for application in future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- literacy skills to develop quality objectives and criteria
- communication and leadership skills to motivate staff, convey expectations and ensure outcomes are met
- analytical skills to monitor achievement of project outcomes against quality criteria
- coaching and mentoring skills to boost performance.

Required knowledge

- quality management theory, techniques, tools and methodologies
- roles and responsibilities in project management
- methods for managing and improving performance
- relevant legislation codes and national standards:
  - award and enterprise agreements and industrial instruments
  - industry codes of practice
  - legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated evidence of successfully managing project staff so that quality outcomes were achieved on multiple complex projects • knowledge of a range of quality management tools, techniques and methodologies.
Context of and specific resources for assessment	Assessment must ensure: • access to project documentation which includes quality criteria and evidence of quality monitoring and improvement practices • consideration of feedback from project stakeholders regarding project quality management.
Method of assessment	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or an external consultant. • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project quality and their application to different situations • analysis of candidate responses in addressing case studies and scenarios which present project quality management issues and problems • review of project plan quality requirements • review of implementation of agreed changes • evaluation of review of project outcomes against performance criteria.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Quality objectives may include:	• negotiated trade-offs between cost, schedule and performance • requirements from a higher project authority • requirements from the client and other stakeholders • those quality aspects which may impact on customer satisfaction
Quality management plan may include:	• authorisations and responsibilities for quality control • continuous improvement • established processes • quality assurance
Quality management methods, ***techniques and tools*** may include:	• benchmarking • brainstorming • charting processes • control charts • defining control • flowcharts • group work activities • histograms • pareto charts • processes that limit and/or indicate variation • ranking candidates • run charts • scattergrams • undertaking benefit/cost analysis
Quality control may include:	• monitoring conformance with specifications • monitoring of regular inspections by internal or external agents • recommending ways to eliminate causes of unsatisfactory performance of products or processes

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RANGE STATEMENT	
Improvements may include:	• formal practices, such as total quality management or continuous improvement • improvement by less formal processes that enhance both the product quality and processes of the project, for example client surveys to determine client satisfaction with project team performance

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG506A Manage project human resources

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to undertake human resource management (HRM) within projects. It involves planning for human resources, implementing staff training and development, and managing the project team and stakeholders. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or an external consultant. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a program manager to manage human resources within multiple projects are addressed in BSBPMG606A Direct human resources management of a project program.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Implement human resource and stakeholder planning activities	1.1. Identify project stakeholders and verify their expectations in order to quantify project outcomes 1.2. Determine resource requirements for individual tasks, with input from stakeholders and guidance from a higher project authority, to determine project staffing levels and required competencies 1.3. Establish ***project organisation and structure*** to align individual and group competencies with project tasks 1.4. Allocate ***staff*** to the project with the approval of a higher project authority, to meet work requirements throughout the project life cycle 1.5. Develop and use ***HRM methods***, ***techniques and tools*** to implement procedures and plans to ensure clarity of understanding and ongoing HRM
2. Implement staff training and development	2.1. Communicate designated staff responsibilities, authority and individual performance measurement criteria to the project team and other relevant stakeholders, to ensure clarity of understanding of the work and to provide a basis for ongoing assessment 2.2. Identify, plan and implement ongoing development and training of project team members to achieve HRM and overall project objectives, with agreement of a higher project authority 2.3. Measure individuals' performance against agreed criteria and initiate actions to overcome shortfalls in performance and to encourage career progression
3. Manage the project team and stakeholders	3.1. Implement processes to promote continuous improvement of staff, and take actions to improve staff and overall project effectiveness 3.2. Monitor and report internal and external influences on individual and project team member performance and morale to a higher project authority, if necessary, for remedial action 3.3. Implement established procedures for interpersonal communication, counselling and conflict resolution to maintain a positive working environment 3.4. Continually review stakeholder expectations to resolve expectation variance and to ensure project is on track to deliver expected outcomes 3.5. Identify and manage inter-project and intra-project

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ELEMENT	PERFORMANCE CRITERIA
	conflict to minimise impact on achievement of project objectives 3.6. Identify and document human resource and stakeholder management issues, and recommended improvements, and pass on to higher project authority for application in future projects

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• planning skills to identify skills required and to allocate project responsibilities to staff • communication and leadership skills to motivate staff, convey expectations and ensure outcomes are met • interpersonal skills to resolve conflict • coaching and mentoring skills to boost performance • analytical skills to review project and to identify improvements.
Required knowledge
• roles and responsibilities in project management • methods for managing and improving performance • HRM legislation, methods, techniques and tools.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated evidence of successfully managing project staff so that outcomes were achieved on multiple complex projects • knowledge of HRM legislation, methods, techniques and tools.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace documentation • consideration of feedback from project team and other stakeholders on how human resources were managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project human resources and their application to different situations • analysis of responses addressing case studies and scenarios which present project human resource management issues and problems • assessment of staff allocated to the project • evaluation of processes used to measure individuals' performance against agreed criteria and to overcome shortfalls in performance • evaluation of how procedures for interpersonal communication, counselling and conflict resolution were implemented.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Project organisation and structure may be affected by established organisational responses to external influences such as:	• accepted work practices • relevant legislation, such as anti-discrimination, equal employment opportunity, affirmative action and occupational health and safety • workplace bargaining
Staff may be:	• external to the organisation, such as consultants, auditors and quality assurance specialists • from within the organisation, such as staff on loan from other projects
HRM methods, ***techniques and tools*** may include established organisational responses to:	• conflict resolution • HRM forecasts, staffing plans and job descriptions • individual and group competency identification and development • performance monitoring, assessment and reporting • staff recruitment and reallocation

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG507A Manage project communications

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to link people, ideas and information at all stages in the project life cycle. Project communications management ensures the timely and appropriate generation, collection, dissemination, storage and disposal of project information through formal structures and processes. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

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Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or an external consultant. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a program manager to manage communications within multiple projects are addressed in BSBPMG607A Direct communications management of a project program.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan communications processes	1.1. Identify, document and analyse information requirements, with input from stakeholders and guidance from a higher project authority, as the basis for communications planning 1.2. Develop, within ***delegated authority***, an agreed communications management plan to ensure clarity of understanding and achievement of project objectives throughout the project life cycle 1.3. Establish and maintain designated ***project management information system*** (***PMIS***) to ensure the quality, validity, timeliness and integrity of information and communication
2. Manage project information	2.1. Manage the generation, gathering, storage, retrieval, analysis and dissemination of information by project staff and stakeholders within established systems and procedures to aid decision making processes throughout the project life cycle 2.2. Implement, modify, monitor and control designated information validation processes to optimise quality and accuracy of data 2.3. Implement and maintain agreed ***communication networks*** between project staff, client and other stakeholders to ensure effective communications at appropriate levels throughout the project life cycle 2.4. Identify communication and information management system problems and report them to a higher project authority
3. Assess communications management outcomes	3.1. Conduct finalisation activities to ensure agreed ownership of, and responsibility for, information collected 3.2. Review project outcomes to determine the effectiveness of management information and communications processes and procedures 3.3. Identify and document lessons learned and recommended improvements, and pass on to higher project authority for application in future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to write reports and communicate key issues • technology skills to facilitate effective communication • organisational skills to manage information • analytical skills to review project outcomes.
Required knowledge
• project life cycle and the place of communications within it • project management information systems and their various applications.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development and implementation of a range of project communications that facilitate effective outcomes for multiple complex projects • knowledge of the place of communications within the project life cycle.
Context of and specific resources for assessment	Assessment must ensure: • access to project communication documentation • consideration of feedback from project team members and other stakeholders as to how effectively communication was managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project communications and their application to different situations • analysis of responses in addressing case studies and scenarios which present project communication management issues and problems • observation of performance in role plays which demonstrate communication skills • evaluation of communications management plan • review of identification and reporting of communication and information management system problems.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Delegated authority means that activities may:	• be conducted routinely or as changing circumstances dictate • be done independently within broad guidance or by taking the lead of a team • involve consultation with other project members, teams and internal stakeholders • involve the selection, use and supervision of appropriate communications management methods and tools • take into account internal organisational change and external environmental change
Project management information system is a means for communicating knowledge about the project and provides a systematic approach to the storing, searching and retrieval of information relevant to the project and may include:	• complex computer-based systems • modified systems to cater for unique project requirements • simple manual systems
Communication networks may include:	• client organisation and end users • formal networks • informal networks • organisation's communication networks • specific networks

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG508A Manage project risk

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage risk within a project to avoid adverse effects on project outcomes. It covers determining, monitoring and controlling project risks, and assessing risk management outcomes. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or an external consultant. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a program manager to manage risk within multiple projects are addressed in BSBPMG608A Direct risk management of a project program.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine project risks	1.1. Identify, document and analyse ***risks***, in consultation with stakeholders and higher project authority, as the basis for risk planning 1.2. Use established ***risk management techniques and tools***, within ***delegated authority***, to analyse risks, assess options and recommend preferred risk approaches 1.3. Develop risk management plans, secure agreement of stakeholders and communicate plans to ensure clarity of understanding and ongoing management of risk factors 1.4. Establish designated ***risk management processes and procedures*** to enable effective management and communication of risk events, responses and results
2. Monitor and control project risks	2.1. Manage project in accordance with established project and risk management plans to ensure a common approach to the achievement of objectives 2.2. Monitor progress against project plans to identify variances and ***recommend responses*** to a higher project authority for remedial action 2.3. Implement agreed risk responses and modify plans to reflect changing project objectives in an environment of uncertainty
3. Assess risk management outcomes	3.1. Review project outcomes to determine effectiveness of risk management processes and procedures 3.2. Identify and document risk issues and recommended improvements, and pass on to higher project authority for application in future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to write risk management plans • problem-solving skills to control risks • lateral thinking skills to identify risks • planning and organisational skills to monitor project progress • analytical skills to review project outcomes in terms of risk management.
Required knowledge
• risk management framework • risk management techniques, tools and approaches.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated evidence of effective risk management for multiple complex projects • knowledge of risk management techniques, strategies and tools.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace risk management documentation • consideration of feedback from project stakeholders as to how risks were managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of the risk management framework • analysis of responses in addressing case studies and scenarios which present project scope management issues and problems • review of risk management plans • evaluation of monitoring of progress against project plans • assessment of identified and documented risk issues and recommended improvements.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units in the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Risks may be:	• actual • likely/probable • perceived • potential
Risk management techniques and tools may include:	• calling upon personal experience and/or subject matter experts • conducting or supervising qualitative and/or quantitative risk analysis, such as schedule simulation, decision analysis, contingency planning and alternative strategy development • using specialist risk analysis tools to assist in the decision making process
Delegated authority refers to planning and activities that may:	• be conducted routinely or as changing circumstances dictate • be done independently within broad guidance or by taking the lead of a team • involve consultation with other project members, teams and internal stakeholders • involve the selection, use and supervision of appropriate risk management methods, tools and techniques
Risk management processes and procedures may include:	• communication with stakeholders, dispute resolution and modification procedures • implementation of risk control trigger mechanisms • measurement of actual progress against planned milestones • recording and reporting of major variance • setting key milestones at significant points during the project and at completion
Recommended responses to variations may be made:	• in consultation with project team members, section heads, project manager and stakeholders • independently or with higher project authority

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RANGE STATEMENT	
	endorsement if necessary • regularly throughout the project life cycle • taking into account internal organisational change and external environmental change

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG509A Manage project procurement

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to undertake procurement and contract management within projects. It covers determining procurement requirements, establishing agreed procurement processes, conducting contracting and procurement activities, and managing finalisation processes. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

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Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or an external consultant. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a program manager to manage procurement within multiple projects are addressed in BSBPMG609A Direct procurement and contracting for a project program.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine procurement requirements	1.1. Identify procurement requirements with input from stakeholders as the basis for procurement planning and contracts 1.2. Establish and maintain, within ***delegated authority***, an agreed ***procurement management plan*** and strategies to ensure clarity of understanding between stakeholders and achievement of project objectives
2. Establish agreed procurement processes	2.1. Obtain information from established sources capable of fulfilling procurement requirements to determine how project objectives can be met 2.2. Adopt established selection processes and selection criteria, including occupational health and safety (OHS) requirements, and communicate to stakeholders and prospective contractors or suppliers to ensure fair competition 2.3. Obtain approvals for procurement processes to be used for the project from higher project authority to enable formal discussions to be conducted
3. Conduct contracting and procurement activities	3.1. Communicate agreed proposals and/or specifications to prospective contractors or suppliers to ensure clarity of understanding of project objectives 3.2. Evaluate responses and select preferred contractors or suppliers in accordance with current legal requirements and agreed selection processes 3.3. Conduct negotiations with preferred contractor or supplier, with guidance of higher project authority if necessary, to agree on contract terms and conditions, establish common goals and minimise uncertainty
4. Implement contract and/or procurement	4.1. Implement established procurement management plan and make ***modifications*** with higher project authority approval, to ensure a common approach to achievement of objectives 4.2. Review progress and manage agreed changes to ensure timely completion of tasks, resolution of conflicts and achievement of project objectives within the legal framework of the contract 4.3. Identify and report procurement management problems to higher project authority and implement agreed remedial actions to ensure project objectives are met
5. Manage contract and	5.1. Conduct finalisation activities to ensure contract

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ELEMENT	PERFORMANCE CRITERIA
procurement finalisation procedures	deliverables meet contractual requirements 5.2. Review project outcomes using available ***procurement records and information*** to determine effectiveness of contracting and procurement processes and procedures 5.3. Document lessons learned and recommended improvements, and pass on to higher project authority for application in future projects

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• problem-solving skills to resolve contractual and logistic issues • negotiation skills to obtain required agreement in procurement and contracting discussions • planning and organisational skills to identify procurement and contract requirements and to adjust and sequence these appropriately • literacy and numeracy skills to produce and work with a range of procurement and contract documentation • technology skills to use procurement and financial management software.
Required knowledge
• contracts and legal obligations as they relate to project management • procurement options, procedures and documentation • relevant legislation, codes and national standards relevant.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated experience in managing procurement and contracting processes in multiple complex projects • knowledge of contracts and legal obligations as they relate to project management.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace documentation in the area of procurement and contracts • consideration of evidence from stakeholders as to how procurement was managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project procurement and their application to different situations • analysis of responses in addressing case studies and scenarios which present project procurement and contract management issues and problems • review of procurement management plan • review of communication of agreed proposals and/or specifications to prospective contractors or suppliers • assessment of evaluation of responses and selection processes for preferred contractors or suppliers • review of identification and reporting of procurement management problems.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

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EVIDENCE GUIDE	
	• other units in the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Delegated authority refers to planning and activities that may:	• be conducted routinely or as changing circumstances dictate • be done independently within broad guidance or by taking the lead of a team • involve consultation with other project members, teams and internal stakeholders • involve the selection, use and supervision of appropriate procurement management methods, tools and techniques • take into account internal organisational change and external environmental change
Procurement management plan identifies and outlines:	• how procurement arrangements are communicated to stakeholders • processes to be used for procurement of resources • process for monitoring and evaluating procurement related to the project • procurement objectives, strategies and time lines • resources to be obtained against a time line and budget • responsibilities for staff/team members
Modifications may be made:	• in consultation with project team members, section heads, project manager and stakeholders • independently or with higher project authority endorsement if necessary • regularly throughout the project life cycle • taking into account internal organisational change and external environmental change
Procurement records and information may include:	• contract change proposals and approvals • contract discharge and asset disposal register • contract documentation • contract negotiation documentation

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RANGE STATEMENT	
	• contractor selection criteria, processes and recommendations • procurement management plan • product specifications • test and acceptance procedures and documentation

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG510A Manage projects

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage a straightforward project or a section of a larger project. This unit addresses the management of projects including the development of a project plan, administering and monitoring the project, finalising the project and reviewing the project to identify lessons learnt for application to future projects. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	The unit focuses on the application of project management skills and the requirement to meet time lines, quality standards, budgetary limits and other requirements set for the project. The unit does not apply to specialist project managers. For specialist project managers, the units of competency in the Project Management competency field will be applicable.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Define project	1.1. Access ***project scope and other relevant documentation*** 1.2. Define project ***stakeholders*** 1.3. Seek clarification from ***delegating authority*** of any issues related to project and ***project parameters*** 1.4. Identify limits of own responsibility and reporting requirements 1.5. Clarify relationship of project to other projects and to the organisation's objectives 1.6. Determine and access available resources to undertake project
2. Develop project plan	2.1. Develop ***project plan*** including timelines, work breakdown structure, role and responsibilities and other details of how the project will be managed in relation to the project parameters 2.2. Identify and access appropriate ***project management tools*** 2.3. Formulate risk management plan for project, including occupational health and safety (OHS) 2.4. Develop and approve project budget 2.5. Consult team members and take their views into account in planning the project 2.6. Finalise project plan and gain any necessary approvals to commence project according to documented plan
3. Administer and monitor project	3.1. Take action to ensure project team members are clear about their responsibilities and the project requirements 3.2. Provide ***support for project team members***, especially with regard to specific needs, to ensure that the quality of the expected outcomes of the project and documented time lines are met 3.3. Establish and maintain ***required record keeping systems*** throughout the project 3.4. Implement and monitor plans for managing project finances, resources (human, physical and technical) and quality 3.5. Complete and forward project reports as required to stakeholders 3.6. Undertake ***risk management*** as required to ensure

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ELEMENT	PERFORMANCE CRITERIA
	project outcomes are met 3.7. Achieve project deliverables
4. Finalise project	4.1. Complete financial record keeping associated with project and check for accuracy 4.2. Assign staff involved in project to new roles or reassign to previous roles 4.3. Complete project documentation and obtain any ***necessary sign offs*** for concluding project
5. Review project	5.1. Review project outcomes and processes against the project scope and plan 5.2. Involve team members in the project review 5.3. Document lessons learnt from the project and report within the organisation

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication and negotiation skills to work with team members and other stakeholders to maintain project schedules
- literacy skills to read, write and review a range of documentation
- planning and organising skills to develop, monitor and maintain implementation schedules
- numeracy skills to analyse data, and to compare time lines and promotional costs against budgets
- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities.

Required knowledge

- relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - environmental issues
  - OHS
- organisational structure, and lines of authority and communication within the organisation
- how the project relates to organisation's overall mission, goals, objectives and operations.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development of a project plan • details of monitoring arrangement/s and evaluation of the project plan's efficacy to address time lines and budgets of project • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace project documentation.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to assess knowledge of how the project relates to the organisation's overall mission, goals, objectives and operations • review of project risk management plan and project plan • evaluation of project reports forwarded to stakeholders • analysis of documentation reviewing project outcomes and processes against the project scope and plan • evaluation of documentation outlining lessons learnt from the project.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other project management units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Project scope and other relevant documentation may include:	• contract or other agreement • project brief • project plan or summary • other documents outlining expected outcomes of the project, inclusions and exclusions from project, timeframes for project, quality standards for project, project resources
Stakeholders may include:	• clients or customers (internal and external) • funding bodies • management, employees and relevant key personnel (internal and external) with special responsibilities • project sponsor
Delegating authority may include:	• customer or client • funding body • manager or management representative • project sponsor
Project parameters may include:	• finances for project • integration of project within organisation • legislative and quality standards • physical, human and technical resources available or required for project • procurement requirements associated with project • reporting requirements • risks associated with project, including OHS • scope of project • time lines
Project management tools may include:	• cost schedule control system • Critical Path Method • Gantt and bar charts • life cycle cost analysis • logistics support analysis

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RANGE STATEMENT	
	• PERT charts • project management software • spreadsheets • technical resources required for the project, for example OHS management system tools
Support for project team members may include:	• additional physical, human and technical resources (within allocated budget) if and as required • encouragement • feedback • learning and development • regular project team meetings • supervision, mentoring and coaching
Required record keeping systems may include systems for:	• correspondence • financial data including costs, expenditure, income generated, purchases • project outcomes • quality data including any test results • recording of time spent on project and progress in completing project • samples, prototypes, models
Risk management may include:	• changing roles and responsibilities within project team • negotiating an extension of deadline, or redefining completion or quantities or quality of outcomes • outsourcing some aspects of the project • reducing costs • researching and applying more efficient methods for completing project tasks • seeking further resources to meet deadline • sharing of ideas to gain improvements to work undertaken within the project
Necessary sign offs may be required by:	• clients, customers • funding body • management • project sponsor

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Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBPMG601A Direct the integration of projects

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage the integration of all functions of project management in a program or multiple project context. This covers managing conflicting priorities between projects, directing project managers in re aligning projects within the program, directing the internal environment with the needs and expectations of the external environment, and directing projects within the program throughout their life cycle. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	A program is defined as a set of interrelated projects, each of which has a project manager. Multiple projects (sometimes called a portfolio of projects) refers to a number of projects related in some way and managed by the same person as a program to achieve a common organisational objective/s. For the purposes of this unit someone who manages a suite of projects (a program) will be referred to as a program manager. The functions performed by a project manager to manage integration within individual projects are addressed in BSBPMG501A Manage application of project integrative processes.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Direct integration of all functions of project management	1.1. Support project managers in project stakeholder analysis to determine the influence of others on project outcomes 1.2. Analyse, rationalise and integrate the requirements of all projects and the inter-relationships of ***project management functions*** to determine agreed, ***achievable program objectives*** that align to organisational goals, strategies and objectives as stated in strategic planning documentation 1.3. Review, rationalise and, when approved, integrate project plans into a structured, cohesive program plan for ongoing program management 1.4. Derive integrated program control mechanisms from project plans, to establish program control requirements 1.5. Use project plans to develop consolidated program budgets, schedules and interdependencies, and to identify program risks
2. Direct the internal project environment to meet external needs and expectations	2.1. Direct the ***internal project working environment*** to ensure project managers' work is conducted effectively throughout multiple, aligned project life cycles 2.2. Establish and maintain links to direct the alignment between projects and organisational objectives within the program 2.3. Evaluate project proposals (scope definitions) against the organisation's strategic objectives 2.4. Coordinate and direct conflicting requirements of individual projects to achieve program objectives 2.5. Modify, where necessary, individual project objectives to achieve overall program objectives 2.6. Coordinate the impact of ***external environmental influences*** on individual projects to achieve program objectives
3. Direct projects throughout project life cycles	3.1. Direct all project managers to provide project phases, approval points, review points and other milestones, to allow program integration 3.2. Establish project baselines and report progress in relation to these baselines, to measure program performance throughout the business reporting cycle 3.3. Progressively review project baselines to ensure

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ELEMENT	PERFORMANCE CRITERIA
	nominated benefits are consistent with organisational expectations 3.4. Direct ***finalisation plans***, ***procedures and activities*** to ensure final outcomes are met and that projects meet agreed program objectives 3.5. Review projects finalised in a program management reporting period to evaluate benefits to the business 3.6. Pass on integration management lessons learned to higher project authority and provide feedback for application to other projects

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• high level leadership skills to gain confidence and trust from people working on all levels • literacy skills to communicate decisions and to write quality reports • high level prioritising, planning and organising skills • innovation skills to develop new and better systems for managing in complex situations • problem-solving skills to deal with project management issues.
Required knowledge
• program planning • methodologies, tools and techniques for project management • leadership models • relevant legislation, codes and national standards.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated experience in directing an integrated range of concurrent projects so that project outcomes and stakeholders expectations are met • knowledge of relevant legislation, codes and national standards.
Context of and specific resources for assessment	Assessment must ensure: • access to a range of project documentation • consideration of feedback from project stakeholders.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance of scope management techniques by the candidate • analysis of responses addressing different program management case studies and scenarios • oral or written questioning to assess knowledge of strategies for managing project integration and their application to different situations • assessment of consolidated program budgets, schedules, interdependencies and identified program risks • assessment of project baselines established and progress reported in relation to these baselines • review of program plan.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units in the Advanced Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Project management functions are:	• communications • cost • human resources • procurement • quality • risk • scope • time
Achievable program objectives may include:	• client's objectives, for example maximum value for money or maximum performance at minimum cost • end-user/s objectives, for example maximum performance as well as optional extras • higher project authorities' objectives (that is, management/projects governance group), for example reputation, retention of market share, buying into market within the constraints of performance, time, cost, quality, resources and skills • organisation's objectives, for example quantifiable benefits • supplier's/contractor's objectives, for example minimum cost, minimum time and acceptable quality
Internal project working environment may include:	• computing support and integrated computer networks • identity and differentiation of the program's projects within the larger environment • personal working conditions (physical and emotional) • physical location of program project managers, personnel and equipment • physical location of projects within the organisation

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RANGE STATEMENT	
	• teams and interpersonal dynamics
External environmental influences may include:	• employee representative groups, such as unions, professional associations and lobby groups • external stakeholder expectations • parent organisation, enterprise and/or industry • physical environment, for example geography, ecology and environmental sensitivity • political, environmental and societal influences • public and media interest
Finalisation plans, ***procedures and activities*** may include:	• assessment of stakeholder satisfaction against expectations • evaluation of projects completed in a reporting period • evaluation of projects for benefits derived • forwarding program progress report to higher governance authority for projects • review of success/failure criteria for projects completed in a given reporting period • settling of financial liabilities for projects completed in a consolidated budget context • transition of responsibility/ownership of projects' deliverables/products for those projects that concluded in a reporting/management period (such as financial year)

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

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Co-requisite units

Co-requisite units		

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BSBPMG602A Direct the scope of a project program

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to direct the scope of projects within a program or multiple projects context. It covers the management of project authorisations and defining, planning and managing the program scope. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	A program is defined as a set of interrelated projects, each of which has a project manager. Multiple projects (sometimes called a portfolio of projects) refers to a number of projects related in some way and managed by the same person as a program to achieve a common organisational objective/s. For the purposes of this unit someone who manages a suite of projects (a program) will be referred to as a program manager. The functions performed by a project manager to manage scope within individual projects are addressed in BSBPMG502A Manage project scope.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Authorise projects	1.1. Analyse ***needs***, in consultation with client and relevant stakeholders, to justify each project and to designate project managers 1.2. Conduct project selection and prioritisation within guidelines provided by, or under the direction of, a relevant (governance) authority 1.3. Make ***project authorisation recommendations*** to relevant authority as the basis for future project management activity, and commitment of resources and effort
2. Define and plan program scope	2.1. Define projects' objectives, major deliverables and resource requirements at the project and program level, and confirm them with the governance group or relevant authority 2.2. Determine and agree measurable project outcomes and benefits to enable quantified evaluation of program performance 2.3. Develop, agree on and communicate scope definition, ***scope management*** strategies and plans 2.4. Align program scope to business requirements and organisational strategy
3. Manage program scope	3.1. Conduct regular program reviews to measure ***project performance*** and to ensure that stated program and business/strategic objectives are met 3.2. Establish and maintain ***change management system*** to form the basis of ongoing scope management 3.3. Conduct ***reviews of scope changes*** and take action to ensure that project and program objectives are achieved or modified 3.4. Measure project outcomes against defined program scope and aligned strategic objectives 3.5. Communicate results of program outcomes to relevant authority 3.6. Pass on scope management lessons learned to higher project authority for application in planning and implementation of later projects within the program

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• high level literacy skills to review and amend project plans, to communicate decisions and to write quality reports • high level analysis, planning, organising, problem-solving and evaluating skills in relation to project scope management • self management skills to prioritise actions for successful outcomes • negotiation skills to control proposed changes in scope.
Required knowledge
• scope management plans, methodologies, techniques and tools • project life cycle and the significance of scope management • typical challenges and issues encountered in project scope management and options for addressing these.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated experience in directing a range of concurrent projects so that scope is successfully managed across all projects • knowledge of a broad range of project scope management tools, methodologies and techniques.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace documentation, including feedback from stakeholders, which reflects how scope was managed for projects.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance of scope management techniques by the candidate • analysis of responses addressing different project scope management case studies and scenarios • oral or written questioning to assess knowledge of strategies for managing project scope and their application to different situations • review of project authorisation recommendations • assessment of measurement of project performance.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Advanced Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Needs may be:	• activity-oriented, for example to stage major sporting events • improvement-oriented, for example to find better way/s of doing something • outcome-oriented, for example to fulfil needs • product-oriented, for example to acquire new computer systems or buildings
Project authorisation recommendations may include:	• broad details of required project outcomes and objectives • major projects phases, activities and milestones that will require timing coordination across the program (particularly as new approved projects enter the program) • project managers' terms of reference, authorisations and limitations directed by the program manager • relationship between multiple project objectives and the programs and strategic objectives of the organisation
Scope management may include:	• controlling program scope creep, that is incremental increases to scope, to accommodate wishes rather than needs • determining that a scope change has occurred or is about to occur • managing factors which influence changes to scope • managing scope changes when they occur • managing the effect of scope changes on other areas and on the achievement of multiple project objectives • progressive refinement of scope throughout multiple project life cycles
Project performance may include:	• time and resources spent on the projects, as compared to baseline data • projects' progress in terms of time and

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RANGE STATEMENT	
	resources
Change management system may include:	• change to control boards/committees • configuration management • documentation • impact analysis • risk analysis
Reviews of scope changes may include:	• formal agreements, that is contracts, sub-contracts and memoranda of understanding • major elements of the program liable to change, for example deletion of a line of business endeavour, new projects prioritising program and deletion of poorly performing projects • potential, perceived and actual changes • program documentation, including plans, integrated schedules, integrated budgets and integrated (program) risk analysis

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG603A Direct time management of a project program

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to direct time management across projects so that key deliverables meet project and program schedules. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	A program is defined as a set of interrelated projects, each of which has a project manager. Multiple projects (sometimes called a portfolio of projects) refers to a number of projects related in some way and managed by the same person as a program to achieve a common organisational objective/s. For the purposes of this unit someone who manages a suite of projects (a program) will be referred to as a program manager. The functions performed by a project manager to manage time and scheduling within individual projects are addressed in BSBPMG503A Manage project time.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Direct project schedule development	1.1. Determine from individual project plans the duration, effort, sequence and interdependencies of major activities and milestones to form the basis of the program schedule 1.2. Direct project managers by the use of ***time management*** methods, ***techniques and tools***, preferred schedules, ***time management plans***, resource allocation and financial requirements to enable continuous updating and refining of the program schedule 1.3. Formalise and communicate project schedules, with agreement, to stakeholders as the basis for planning, implementation and review of progress
2. Manage program schedules	2.1. Develop, implement and modify mechanisms to monitor, control, record and report actual progress in relation to the agreed schedule and plans 2.2. Conduct ongoing analysis to identify and forecast variances and trends, and to develop responses so that projects meet their schedules 2.3. Manage durations of key activities and interdependencies between projects to enable financial and resource rationalisation across the program, to meet strategic expectations within the management/reporting period of the program 2.4. Review progress and refine the schedule throughout the program life cycle to ensure consistency with changing scope, objectives and constraints related to time and resource availability 2.5. Ensure responses to perceived, potential or actual project schedule changes are authorised to achieve program objectives
3. Analyse time management outcomes	3.1. Review and analyse multiple project and program outcomes from available ***records*** and information to determine the effectiveness of the schedule and time management processes 3.2. Pass on lessons learned to higher project authority and provide feedback for application, planning and implementation of later projects within the program

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• high level leadership skills to inspire trust and confidence in all stakeholder groups • literacy skills to communicate decisions and to write quality reports • communication and interpersonal skills to convey expectations, negotiate, resolve conflict and motivate performance • planning and organising skills to ensure that time lines are met across projects • time management skills (of self and others) • problem-solving skills to address time management issues.
Required knowledge
• relationship between time, cost and resources to the project management framework • time management and estimating • methodologies, techniques and tools, their capabilities, limitations, applicability and outcomes.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated experience in directing project work so that timelines are met across a range of concurrent projects • knowledge of the relationship between time, cost and resources to the project management framework.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace documentation • consideration of feedback from project team and stakeholders as to how time was managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance of program time management by the candidate • analysis of responses addressing different project time management case studies and scenarios • oral or written questioning to assess knowledge of strategies for managing project time and their application to different situations • review of how project schedules were formalised and communicated • evaluation of ongoing analysis to identify and forecast variances and trends • review of progress and refinement of the schedule throughout the program life cycle.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Advanced Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Time management may:	• be conducted non-routinely to meet complex, changing circumstances • be done by taking the lead in a team environment • involve consultation with project managers and selective involvement of stakeholders • involve the direction of the use of appropriate time management methods, processes, procedures, tools and techniques • take into account the impact of organisational and environmental change on the program's projects and vice versa
Techniques and tools may include:	• assessing and reporting the potential impact of multiple project timings and their potential for change on the program, and therefore the organisation • collating and using the products of specialist time analysis to make program-wide time management decisions • directing qualitative and/or quantitative time analysis, such as schedule simulation, decision analysis, contingency planning and alternative strategy development • using personal experience and/or subject matter experts
Time management plans may include:	• alternative schedule management strategies and actions • assigned schedule management responsibilities • contingency plans • formal arrangements • important milestones and critical interdependencies between projects • program consolidated schedule • responsibility assignment • sub-schedules

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RANGE STATEMENT	
Records may take the form of:	• diaries, incident logs, occurrence reports and other such documentation • gantt, PERT and other scheduling charts • lists of variances, trends and forecasts of potential schedule events • program and/or organisation files and records • records of analysis, evaluation of options and selection processes • records of responses, results and lessons learned

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG604A Direct cost management of a project program

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to analyse, coordinate, and refine the budgets of multiple projects that contribute to an overall program budget. It covers directing project budget development, managing program costs and directing the financial completion of projects. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	A program is defined as a set of interrelated projects, each of which has a project manager. Multiple projects (sometimes called a portfolio of projects) refers to a number of projects related in some way and managed by the same person as a program to achieve a common organisational objective/s. For the purposes of this unit someone who manages a suite of projects (a program) will be referred to as a program manager. The functions performed by a project manager to manage costs within individual projects are addressed in BSBPMG504A Manage project costs.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Direct project budget development	1.1. Direct project managers to determine resource requirements for individual tasks, in consultation with appropriate stakeholders, to develop a project budget which contributes to the program budget 1.2. Direct project ***cost estimation*** to enable budgets and cost management processes to be developed for the project life cycles 1.3. Direct and authorise cost strategies and ***cost management plans*** to ensure clarity of understanding and ongoing ***management of project finances*** and the program budget overall
2. Manage program costs	2.1. Develop and maintain ***cost management systems*** to direct monitoring of actual expenditure and to control costs throughout multiple project life cycles and for the program overall 2.2. Conduct analysis, evaluate options and implement responses to project cost variations to maintain control over changing financial and overall program objectives 2.3. Monitor internal and external influences on program costs and, where necessary, seek approval from business management for changes to the approved program budget
3. Direct financial completion	3.1. Provide direction for project ***finalisation activities*** to achieve integrated financial and physical project completion within program and therefore client and organisational expectations 3.2. Review project outcomes from available ***records*** at the finalisation of each project, and analyse information to determine the effectiveness of cost management systems 3.3. File program lessons learned as a resource for future reference and, where necessary, refer to higher project authority for application in planning strategic direction changes and business outcomes for future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• technology skills to oversee project financial performance • numeracy skills to develop and interpret project budgets and to provide financial information • literacy skills to communicate decisions and to write quality reports • leadership skills to inspire trust and confidence in teams, managers and stakeholders • communication and interpersonal skills to convey expectations, resolve conflict and motivate performance • planning skills to review project resource requirements and to cost estimates • problem-solving skills to resolve costing issues.
Required knowledge
• regulatory and legislative financial reporting requirements • methods for costing and estimating project resources • methods for monitoring and controlling project expenditure.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated experience in directing cost management approaches across a range of concurrent projects • knowledge of regulatory and legislative financial reporting requirements.
Context of and specific resources for assessment	Assessment must ensure: • access to financial documentation and files • consideration of feedback from project team and other stakeholders as to how program costs were managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance of scope management techniques by the candidate • analysis of responses addressing different project cost management case studies and scenarios • oral or written questioning to assess knowledge of strategies for managing project costs and their application to different situations • review of written reports on financial outcomes of projects • review of how cost management systems were developed and maintained.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units in the Advanced Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Cost estimation may take account of:	• availability of information at the time • contingencies to allow for identified risks and uncertainty • government regulations, industry codes of practice and organisational influences • overhead and profit margin • stage in each project's life cycle
Cost management plans and activities throughout program management may:	• be conducted non-routinely to meet complex and changing circumstances • be done independently or by taking the lead in a team environment • involve consultation with, and selective involvement of, appropriate project stakeholders • involve the selection, modification and supervision of the use of appropriate cost management methods, processes, procedures, tools and techniques • take into account the impact of organisational and environmental change on the project/program and vice versa
Management of project finances may include:	• approval processes • audit and review • communication, reports and briefs • financial authorisations/delegations • invoice procedures
Development of ***cost management systems*** may involve:	• application of personal judgement • authorising and revising financial delegations • cost modelling and estimating • financial analysis, for example benefit-cost analysis, cash flow analysis, earned value analysis • modification of program methodologies and procedures

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RANGE STATEMENT	
	• program obligation, expenditure forecasting and long-term planning • progress and financial change management

Finalisation activities may include:	• comparison of one project's cost management outcomes with success rates of other projects and with overall (organisation) budgetary expectations
	• direction of project team managers in their:
	  • final audit/reconciliation
	  • close-out of account codes and other financial documentation
	  • settling of financial liabilities
	  • transfer of assets to the client or originating owner
	  • transition of responsibility/ownership of project deliverables/products
	  • warranty requirements resolution

Records may take the form of:	• budgets, commitment and expenditure • cost management lessons learned • cost management plans • financial charts and graphs • financial summaries • program and/or organisation files and records • records of potential and actual costs • reports to higher authority

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

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Co-requisite units

Co-requisite units		

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BSBPMG605A Direct quality management of a project program

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to direct quality management across multiple projects and within the overall program. It covers directing the development of quality requirements, directing quality assurance management, and reviewing and improving the quality of projects and the program. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	A program is defined as a set of interrelated projects, each of which has a project manager. Multiple projects (sometimes called a portfolio of projects) refers to a number of projects related in some way and managed by the same person as a program to achieve a common organisational objective/s. For the purposes of this unit someone who manages a suite of projects (a program) will be referred to as a program manager. The functions performed by a project manager to manage quality within individual projects are addressed in BSBPMG505A Manage project quality.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Direct quality requirements development	1.1. Direct reviews and consultation to ensure that the organisation's quality objectives, standards, levels and criteria are applied at the project level, in consultation with stakeholders 1.2. Modify ***quality management*** methods, techniques and tools to the requirements of the program, as necessary 1.3. Identify and communicate program quality criteria to project managers for implementation 1.4. Direct project managers to develop and implement quality plans that will be used as the basis for performance measurement
2. Direct project quality assurance management	2.1. Analyse results of project activities and product performance to determine compliance with agreed quality standards throughout the project life cycles within the program 2.2. Identify causes of unsatisfactory results in consultation with project managers, clients and stakeholders, and initiate appropriate actions to enable continuous improvement in quality outcomes 2.3. Direct inspections of quality processes and analyse results to determine compliance with quality standards set for the overall program and the organisation 2.4. Develop and maintain a ***quality management system*** to enable effective management and communication of quality issues and outcomes
3. Improve program and project quality	3.1. Continually review and modify the quality management system throughout project activities to ensure project team commitment to continuous improvement of quality processes and outcomes 3.2. Direct project outcomes review and analysis against performance criteria to determine the effectiveness of the quality management system 3.3. Aggregate and use ***quality improvements*** and lessons learned to benefit the business and, where appropriate, pass on program initiatives/projects to organisational management for consideration in support of strategic planning and (re)direction

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• leadership, communication and interpersonal skills to foster compliance with quality benchmarks • literacy skills to communicate decisions and to write quality reports • skills in analysing, interpreting and reviewing data to assess performance against quality benchmarks • problem-solving skills to address gaps in quality assurance.
Required knowledge
• range of quality management methods, techniques, tools and systems and their various applications • relevant Australian and international standards.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated experience in directing the successful application of quality management across a range of concurrent projects • knowledge of relevant Australian and international standards.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace quality documentation • consideration of feedback from project team/s and stakeholders as to how quality was managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance of scope management techniques by the candidate • analysis of responses addressing different project quality management case studies and scenarios • oral or written questioning to assess knowledge of strategies for managing project quality and their application to different situations • assessment how program quality criteria were identified and communicated • review of actions initiated to enable continuous improvement.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units in the Advanced Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Quality management may:	• be conducted non-routinely to meet complex and changing circumstances • be done independently or by taking the lead in a team environment • involve consultation with and direction to, project managers regarding their selective involvement of appropriate project stakeholders • involve the overall direction to project managers for the selection, modification and supervision of the use of appropriate quality management methods, processes, procedures, tools and techniques • take into account the impact of organisational and environmental change on the program and vice versa
Quality management system may include:	• ISO 9000 series or as designed to meet the specific needs of the project
Quality improvements may include:	• formal practices, such as total quality management or continuous improvement • less formal processes which improve both the product quality and processes of the project, for example client surveys to determine client satisfaction with project performance

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG606A Direct human resources management of a project program

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to direct human resource organisation and staffing across the program, to direct project managers in relation to staff performance and to provide leadership within the program. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	A program is defined as a set of interrelated projects, each of which has a project manager. Multiple projects (sometimes called a portfolio of projects) refers to a number of projects related in some way and managed by the same person as a program to achieve a common organisational objective/s. For the purposes of this unit someone who manages a suite of projects (a program) will be referred to as a program manager. The functions performed by a project manager to manage human resources within individual projects are addressed in BSBPMG506A Manage project human resources.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Direct human resources management planning	1.1. Direct human resource requirement analysis for projects to determine numbers and skill levels required for the overall program 1.2. Direct stakeholder assessment to establish a basis for stakeholder management within projects and the overall program 1.3. Direct responsibility assignment for project activities and tasks, and establish authorisation protocols
2. Manage program organisation and staffing	2.1. Determine resource requirements for projects in consultation with project managers and appropriate stakeholders, to establish program staffing levels, allocation to projects and required competencies 2.2. Direct ***project organisation and structure*** to optimise alignment of individual and group competencies within projects 2.3. Direct recruitment of ***staff*** for allocation to projects or reallocation within the organisation, within agreed delegated authority, to meet competency requirements throughout the program 2.4. Direct project managers' use of ***human resources management*** (***HRM***) ***methods***, ***techniques and tools***, and modify for program requirements 2.5. Utilise organisational HRM system and HRM processes across projects
3. Direct project staff performance management	3.1. Obtain agreement of performance measurement criteria for clarity of roles and responsibilities and ongoing assessment 3.2. Ensure systems for ongoing ***development and training*** of personnel across the program are established and implemented by project managers 3.3. Measure individuals' performance against agreed criteria and authorise actions to overcome shortfalls in performance and encourage career progression
4. Provide overall leadership to project teams	4.1. Manage a system of continuous improvement of staff to enhance program effectiveness 4.2. Analyse individual and team performance and morale levels and take action where necessary 4.3. Direct procedures for interpersonal communication, counselling and conflict resolution by project managers, and review results to maintain and promote a positive working environment

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ELEMENT	PERFORMANCE CRITERIA
	4.4. Identify and positively manage intra-organisational and intra-project conflict to maximise achievement of program objectives 4.5. Aggregate HRM lessons learned for application in planning and, where appropriate, pass on information to others for consideration in strategic planning and direction

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• planning skills to identify human resource requirements across the program • literacy skills to communicate decisions and to write quality reports • high level leadership skills to inspire trust and confidence in teams, managers and stakeholders • communication and interpersonal skills to convey expectations, negotiate, resolve conflict and motivate performance • problem-solving skills to address HRM issues across the program • coaching and mentoring skills.
Required knowledge
• human resource management methods, techniques and tools • relevant legislation • models of performance management and performance development.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated experience in directing human resources across a range of concurrent projects so that project objectives are achieved • knowledge of relevant legislation .
Context of and specific resources for assessment	Assessment must ensure: • access to workplace HRM documentation • consideration of feedback from project teams and stakeholders as to how human resource management was handled.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance of scope management techniques by the candidate • analysis of responses addressing different project scope management case studies and scenarios • oral or written questioning to assess knowledge of strategies for managing project human resources and their application to different situations • observation of demonstrated techniques in performance feedback and/or conflict resolution • observation of performance in role plays • review of the measurement of individuals' performance against agreed criteria • evaluation of how the staff continuous improvement system was managed • assessment of analysis of individual and team performance and morale levels.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended,

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EVIDENCE GUIDE	
	for example: • other units in the Advanced Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Project organisation and structure may be affected by external influences such as:	• accepted work practices • legislation, including anti-discrimination, equal employment opportunity, affirmative action and occupational health and safety • workplace bargaining
Staff may:	• be external to the organisation, such as consultants, collaborative or alliance agencies and external authorities • come from within the organisation, such as staff on loan from other programs/projects
Human resources management methods, ***techniques and tools*** may include:	• conflict resolution • HRM forecasts, staffing plans and job descriptions • individual and group competency identification and development • performance monitoring, assessment and reporting • staff recruitment and reallocation
Development and training may be formal or informal, and may include:	• general management • interpersonal communications • project administration, for example computer applications, filing systems • project management • specialist/professional skills and career progression • team building and group activities

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG607A Direct communications management of a project program

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to provide the critical link between people, ideas and information at all stages in the life cycles of multiple projects across a program. It covers directing project communications and information management, managing program communications and analysing communications management outcomes for projects and programs. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	A program is defined as a set of interrelated projects, each of which has a project manager. Multiple projects (sometimes called a portfolio of projects) refers to a number of projects related in some way and managed by the same person as a program to achieve a common organisational objective/s. For the purposes of this unit someone who manages a suite of projects (a program) will be referred to as a program manager. The functions performed by a project manager to manage communications within individual projects are addressed in BSBPMG507A Manage project communications.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Direct planning of project communications	1.1. Direct project information requirements in consultation with appropriate stakeholders as the basis for projects and program communications planning 1.2. Direct ***communications management plans and activities*** to ensure clarity of understanding and achievement of multiple project objectives at all ***levels*** 1.3. Develop ***project management information system*** (PMIS), structure and procedures to maintain the quality, validity, timeliness and integrity of information and communication across the program and in regard to organisational strategic management
2. Direct management of project information	2.1. Direct the generation, gathering, storage, retrieval, analysis and dissemination of information by project staff and stakeholders to improve decision making processes and communications across the program and between the projects 2.2. Direct ***information validation*** processes for development, management and modification to ensure consistent quality and accuracy of data across the program
3. Manage program communications	3.1. Develop and manage formal and informal communication networks between the organisation's management structure, program, projects and key stakeholders to ensure effectiveness throughout the multiple life cycles of projects within the program 3.2. Address potential, perceived and actual problems with communication and management information systems through project managers, and ensure remedial actions are authorised to ensure project, program and organisational objectives are met 3.3. Manage customer relationships beyond the delegated responsibility of project managers to ensure clarity of understanding of objectives and to minimise conflict across the program
4. Analyse communications management outcomes	4.1. Direct project finalisation activities to ensure ownership of, and responsibility for, information outcomes 4.2. Review and analyse project outcomes to determine the effectiveness of management information and

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ELEMENT	PERFORMANCE CRITERIA
	communications systems 4.3. Aggregate and use lessons learned across multiple projects for other applications in the program and the organisation

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• technology skills to direct the management and flow of project information and communications • planning skills to identify project and program information requirements • literacy skills to communicate decisions and to write quality reports • problem-solving skills to address communication management problems • interpersonal skills to communicate with customers and to manage customer relationships and networks • analytical skills to review and analyse project outcomes.
Required knowledge
• PMIS structures and options • information validation processes and their application to various contexts • new technologies for communications and their relative strengths and weaknesses.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated experience in directing communications and information across a range of concurrent projects • knowledge of PMIS structures and options.
Context of and specific resources for assessment	Assessment must ensure: • access to examples of relevant workplace documentation (including electronic media) • consideration of feedback from project teams and stakeholders as to how communications were managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance of scope management techniques by the candidate • analysis of responses addressing different project communications management case studies and scenarios • oral or written questioning to assess knowledge of strategies for managing project communications and their application to different situations • review of the project management information system developed • review of how communication and management information systems were used to address potential, perceived and actual problems • evaluation of how project outcomes were reviewed and analysed to determine the effectiveness of management information and communications systems.
Guidance information for	Holistic assessment with other units relevant to the

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EVIDENCE GUIDE	
assessment	industry sector, workplace and job role is recommended, for example: • other units in the Advanced Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Communications management plans and activities may:	• be conducted non-routinely to meet complex, changing circumstances • be done independently or by taking the lead in a multiple teams environment • involve consultation with project managers and selective involvement of appropriate project stakeholders • involve the selection, modification and supervision of appropriate communications management methods, processes, procedures and tools • take into account the impact of organisational and environmental change on the program and vice versa
Levels may include:	• organisation • operations • program • projects
Project management information system may include:	• hierarchy of decision making responsibility/authority • individual and group authority and responsibilities • limitations and restrictions on subject matter and methods of communication • network structures, processes and procedures for storage and communication of information • types, responsibilities, distribution and regularity of reports, as well as follow-up procedures
Information validation processes may be influenced by:	• age of the information • changes to standards, regulations or limits since information was compiled • cost of the validation process • degree of exposure to mis-information and

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RANGE STATEMENT	
	dis-information • language (translated or converted data may need special attention) • level of detail of information (too much or too little) • potential impact of the information on the program outcome

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG608A Direct risk management of a project program

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage factors that might adversely affect the project program and organisational outcomes. It covers directing the planning and management of project risks, managing risks to the overall program and assessing risk management outcomes for the program and the organisation. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	A program is defined as a set of interrelated projects, each of which has a project manager. Multiple projects (sometimes called a portfolio of projects) refers to a number of projects related in some way and managed by the same person as a program to achieve a common organisational objective/s. For the purposes of this unit someone who manages a suite of projects (a program) will be referred to as a program manager. The functions performed by a project manager to manage risk within individual projects are addressed in BSBPMG508A Manage project risk.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Direct planning of project risk management	1.1. Direct potential, perceived and actual risk events for identification, documentation and analysis, in consultation with project managers and appropriate stakeholders, as the basis for project ***risk management planning*** 1.2. Select and modify project ***risk management methods***, ***techniques and tools*** for project managers to analyse information, evaluate options and determine preferred risk approaches within the overall program environment 1.3. Direct development, communication and implementation of project ***risk management plans*** and strategies to ensure clarity of understanding and achievement of project objectives across the program 1.4. Develop and maintain a project risk management system to enable effective management and communication of risk events, responses and results to stakeholders across projects within the program
2. Direct management of project risk and manage program risk	2.1. Manage the program in accordance with agreed project risk management plans 2.2. Review progress, analyse variance and initiate risk responses to achieve program and multiple project objectives in changing environments 2.3. Direct risks to multiple project outcomes for monitoring, and ensure remedial actions are authorised to achieve project objectives
3. Assess project and program risk management outcomes	3.1. Review and analyse project outcomes to assess the effectiveness of the project risk management system for projects, program and organisational outcomes 3.2. Aggregate, analyse and structure lessons learned, for project managers and senior management to undertake strategic review and planning

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE This section describes the skills and knowledge required for this unit.
Required skills
• analytical skills to plan and review risk management approaches • literacy skills to communicate decisions and to write quality reports • initiative to identify and address risks leading to negative consequences for projects • problem-solving skills to initiate risk responses in changing environments.
Required knowledge
• risk management tools, frameworks, systems, methodologies and standards.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated experience in successfully directing risk management efforts across a range of concurrent projects • knowledge of risk management tools, frameworks, systems, methodologies and standards.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace risk management documentation • consideration of feedback from project teams and stakeholders as to how risks were managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance of scope management techniques by the candidate • analysis of responses addressing different project risk management case studies and scenarios • oral or written questioning to assess knowledge of strategies for managing project risks and their application to different situations • review of the development, communication and implementation of project risk management plans.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units in the Advanced Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Risk management planning may:	• be conducted substantially non-routinely to meet complex and changing circumstances • be done independently or by taking the lead in a multiple projects team environment • involve consultation with project managers and with selective involvement of stakeholders within and external to the organisation • involve the selection, modification and direction of the use of appropriate risk management methods processes, procedures, tools and techniques • take into account the impact of organisational and environmental change on the program and vice versa
Risk management methods, ***techniques and tools*** may involve:	• assessing and reporting the potential impact of multiple projects' risk on the organisation • calling upon personal experience and/or subject matter experts • collating and using the products of specialist risk analysis to make program-wide risk management decisions • conducting or directing qualitative and/or quantitative risk analysis, such as schedule simulation, decision analysis, contingency planning and alternative strategy development
Risk management plans may include:	• assigned risk responsibilities • contingency plans • formal arrangements • occupational health and safety (OHS) risks • potential risk events • preferred and alternative risk management strategies and actions • responsibility assignment

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Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG609A Direct procurement and contracting for a project program

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to direct the management of contracting and procurement activities across projects and programs. It covers setting up the contracting process, directing the management of contract and procurement processes and finalising contracts for projects across the program. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	A program is defined as a set of interrelated projects, each of which has a project manager. Multiple projects (sometimes called a portfolio of projects) refers to a number of projects related in some way and managed by the same person as a program to achieve a common organisational objective/s. For the purposes of this unit someone who manages a suite of projects (a program) will be referred to as a program manager. The functions performed by a project manager to manage procurement within individual projects are addressed in BSBPMG509A Manage project procurement. It should be noted that conflicting priorities between projects are managed with higher project authority support, in this case project governance committees or senior management.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Direct planning for project contracting and procurement	1.1. Direct product specifications and procurement requirements for procurement and contract planning, in consultation with appropriate stakeholders 1.2. Direct development of ***procurement strategies***, ***methods and management plans*** in line with project objectives across the program
2. Direct set up of contract and procurement process	2.1. Direct project managers to source organisations that meet procurement requirements 2.2. Establish selection processes and selection criteria, in consultation with stakeholders, and arrange for communication to prospective contractors 2.3. Ensure contract and procurement actions accord with organisation and program objectives
3. Direct management of contract and procurement process	3.1. Provide direction for requirements of ***proposals*** and arrange communication to prospective contractors 3.2. Ensure responses are evaluated and preferred contractors are selected in accordance with agreed selection processes 3.3. Direct negotiation of contract terms and conditions between client and preferred contractor
4. Direct management of contracts	4.1. Direct management of contract and procurement activities in accordance with program contract and procurement management guidelines 4.2. Provide direction for regular reviews from available ***records*** and information, and ensure variances are analysed and changes are agreed for implementation 4.3. Ensure project managers work within the legal and organisational framework for contracts 4.4. Identify potential, perceived and actual contractual conflicts and approve remedial actions to minimise disruption
5. Direct finalisation of contracts	5.1. Direct finalisation activities for management of contract deliverables in accordance with contractual project and program requirements 5.2. Direct review and analysis of project outcomes to determine the effectiveness of contract and procurement processes and procedures 5.3. Aggregate and use lessons learned for application in planning and implementation of later projects within the program and, where appropriate, pass on to

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ELEMENT	PERFORMANCE CRITERIA
	organisational management for use in strategic planning

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to communicate decisions, to comprehend complex contractual provisions and to write quality reports • negotiation skills to set up contracts, to agree prices and terms, and to resolve disputes • planning and organising skills to ensure procurement processes are properly established and sequenced • analytical skills to review program performance and to recommend improvements.
Required knowledge
• contract management and legal obligations of both parties • procurement processes and options.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated experience in successfully directing procurement and contract management processes across a range of concurrent projects • knowledge of contract management and legal obligations.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace contractual and procurement documentation • consideration of feedback from project team and stakeholders as to how procurement and contractual processes were handled.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance of scope management techniques by the candidate • analysis of responses addressing different project scope management case studies and scenarios • oral or written questioning to assess knowledge of strategies for managing project procurement and contracts, and their application to different situations • review of established selection processes and selection criteria and how they were communicated to prospective contractors • assessment of identified potential, perceived and actual contractual conflicts and remedial actions taken to minimise disruption.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units in the Advanced Diploma of Project

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EVIDENCE GUIDE	
	Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Procurement strategies, ***methods and management plans*** may include:	• conflict resolution processes • contract performance plans and an associated performance monitoring processes • contractor and sub-contractor responsibilities, controls and reporting relationships • explanatory information (for example background, restrictions or expectations) relating to special terms and conditions, planning for long lead-time items and critical program components, and transition plans • procurement, test and acceptance procedures and payment schedules
Proposals may take the form of:	• expressions of interest • quotations • submissions • tenders
Records may take the form of:	• contract analysis, evaluation of options and strategy development • contract discharge procedures and outcomes • contract negotiation documentation, for example contract negotiation strategies, plans, team and individual directives • contractor identification, evaluation and selection records • development and management of contract change procedures • procurement management lessons learned • procurement management plans • product specifications • progress measurement and conflict resolution process records • test and acceptance procedures

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Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPUR301B Purchase goods and services

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit specifies the outcomes required to determine purchasing requirements, and make and receive purchases. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals who conduct low risk, low expenditure purchasing for an organisation using established and documented purchasing strategies. The unit may be undertaken by someone working in a small organisation who has general responsibility for conducting purchasing within an organisation, or by a purchasing specialist working in a large organisation. Some judgement may be required to make decisions in the implementation of purchasing strategies and work is generally conducted under the supervision of others.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Understand purchasing and own requirements	1.1. Read, understand and clarify organisation's ***purchasing strategies*** as required 1.2. Determine own role and ***limits*** of authority in consultation with ***relevant personnel***
2. Make purchases	2.1. Receive purchase specifications from relevant personnel and clarify as required 2.2. Select ***purchasing methods*** most appropriate to particular purchases within limits of own role 2.3. Obtain approvals for purchases as required 2.4. Obtain quotations from suppliers as required 2.5. Select suppliers, place orders and make purchases
3. Receive purchases	3.1. Receive goods or make arrangements to receive services 3.2. Advise relevant personnel of receipt of purchase 3.3. Ensure goods received are checked for compliance with specifications 3.4. Take action to resolve non-compliance with specifications 3.5. Facilitate registration of new assets 3.6. File and store ***purchase records***

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities
- communication skills to liaise with suppliers and end users of purchases
- literacy skills to document purchases and write reports on purchasing activities
- information management and research skills to analyse and assess purchasing options and offers
- technology skills to use of software to keep records of purchases made
- data collection skills to keep records related to purchasing.

Required knowledge

- codes of ethics and conduct
- identification and overview knowledge of key provisions of relevant legislation from all levels of government that affects business operations, codes of practice and national standards, such as:
  - consumer protection legislation
  - contract law
  - import of goods and services, where relevant
  - sale of goods legislation
  - Trade Practices Act
- organisation policy and procedures relating to:
  - purchasing strategies
  - record-keeping systems related to purchasing and assets
  - standard contracting arrangements
- product knowledge about the goods and services being supplied
- purchasing and procurement principles for:
  - accountability
  - probity and transparency
  - risk management
  - value for money.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • obtaining quotes from prospective suppliers for a low risk, low expenditure good to be purchased • selection of appropriate purchasing methods for a low risk, low expenditure purchase • receipt, checking and documentation of a low risk, low expenditure purchase.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • organisation's purchasing strategies and relevant purchasing records.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports documenting purchasing requirements and records of purchases made • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of obtaining quotes form suppliers • oral or written questioning to assess knowledge • review testimony from team members, colleagues, supervisors or managers.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other purchasing units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Purchasing strategies may include:	• criteria for making purchasing decisions • legal requirements and policies and procedures that underpin strategies and that are relevant to role • policies, procedures, guidelines and documentation formats for purchasing from suppliers including entities owned by the organisation, partners, alliance members and local and distant suppliers
Limits may include:	• approval processes for purchases • expenditure approval limits
Relevant personnel may include:	• CEOs • managers • leaders • coordinators • supervisors • other persons authorised to commit the organisation to purchases • internal users of purchased goods and services • owner • Board members • specialist personnel involved in purchasing, asset maintenance and finance
Purchasing methods may include:	• credit card purchases • direct purchases from retail outlets • online purchases • petty cash • purchases using standing agreements or accounts with suppliers • written and/or verbal quotations • written and/or verbal supply agreements
Purchase records may include:	• corporate credit card transaction documentation

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RANGE STATEMENT	
	• invoices, statements and payment requests • petty cash vouchers • purchase requests and orders • receipt advices for goods and services • records of supplier performance

Unit Sector(s)

Unit sector	

Competency field

Competency field	Administration - Purchasing and Contracting

Co-requisite units

Co-requisite units		

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BSBRKG304B Maintain business records

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to maintain the records of a business or records system in good order on a day to day basis. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals requiring some understanding of relevant theoretical knowledge relating to recordkeeping functions. It is not assumed that individuals at this level would have responsibility for supervising the work of others; however it is assumed that as a recordkeeping practitioner their work will support effective recordkeeping and governance practices across the organisation. The application is in relation to the maintenance of records from an existing business or records system that has guidelines and processes to assist in the process. Work carried out in the interest of system maintenance will be performed under supervision or in consultation with more senior staff or users of the system.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Collate business records	1.1. Identify individual ***records*** or ***information*** which should be incorporated into ***business or records system*** according to organisational criteria 1.2. Sort records in accordance with workplace requirements 1.3. Adhere to ***security and access requirements*** in accordance with organisational procedures
2. Update business or records system	2.1. Identify and record control information for describing new records to be incorporated into business or records system 2.2. Update control information describing movement or use of records within business or records system 2.3. Accurately record and update control information in business or records system 2.4. Identify and remove records of completed business activities from current system for disposal
3. Prepare reports from the business or records system	3.1. Interpret requests for ***reports*** and clarify the content and frequency sought, where necessary 3.2. Prepare reports from business or records system in accordance with instructions or request 3.3. Prepare reports in accordance with organisational security and access procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to explain and clarify procedures, and to interview users to identify their records/information needs
- literacy skills to read and interpret nature of record content, functions and problems
- problem-solving and analysis skills to identify and manage records.

Required knowledge

- key provisions of relevant legislation from all forms of government, regulations, standards and documentation that may affect aspects of business operations, such as:
  - AS 5044.1:2002 AGLS Metadata element set
  - AS 5090:2003 Work process analysis for recordkeeping
  - AS ISO 15489:2004 Records management
  - AS ISO 23081.1:2006 Information and documentation - Records management processes - Metadata for records - Principles
  - Australian Stock Exchange(ASX) Principles of Good Corporate Governance
  - ethical principles
  - codes of practice
  - privacy and freedom of information
  - archives and records legislation
  - occupational health and safety
- general principles and processes of records management and records management systems, such as:
  - systems of control
  - records continuum theory
  - mandate and ownership of business process
  - environmental context
  - records characteristics.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • complying with organisational procedures and workplace requirements • knowledge and understanding of business or records systems • accurately recording information.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated work environment • access to office equipment and resources • access to examples of records, recordkeeping systems and policies • access to workplace reference materials such as procedural manuals and company policies.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • demonstration of techniques • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of authenticated documents from the workplace or training environment • oral or written questioning to assess knowledge of general principles and processes of business or records systems.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • administration units • other knowledge management units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Records may be:	• at different stages of use:
	  • active
	  • archival
	• digital:
	  • remote drives
	  • servers
	  • CDs
	  • DVDs
	  • imaging systems
	  • PC-based applications
	  • mainframe
	• physical:
	  • audio-visual or multimedia
	  • graphic
	  • microform
	  • paper-based (acid free or multiple copies
	• from a variety of sources:
	  • already in the custody of the organisation
	  • in the process of being transferred between organisations

Information may include:	• customer relationship management • expenditure • human resources management • invoicing/sales • legislative/regulatory/licensing compliance • risk management • stock control • taxation, asset management
Business or records systems may be:	• archival control systems • business systems • cash register-based systems

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RANGE STATEMENT	

	• characteristics relating to:
	  • aggregations
	  • context
	  • entities
	  • metadata
	• current business or records systems
	• electronic records and document management system (ERDMS)
	• informal
	• paper-based accumulation and card systems
	• PC-based accounting systems, employee and tax records systems
	• proprietary recordkeeping package
	• storage facilities systems
	• systems unique to individual workplaces and organisations

Security and access requirements may relate to:	• individuals or positions of individuals • protection of privacy • security restrictions • trade secrets or commercial-in-confidence information
Reports may be:	• ad hoc • computer generated • hand prepared • part of a management solution for another support/operational function • regular records management reports • system management reports

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Knowledge Management - Recordkeeping

Co-requisite units

Co-requisite units		

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BSBRKG403C Set up a business or records system for a small business

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Training Package version 6.0.* Revised unit. Required knowledge and Range Statement changed to include environmentally sustainable practices. Replaces BSBRKG403B Set up a business or records system for a small business

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to research, develop and implement business or records systems for a small office.

Application of the Unit

This unit applies to individuals who are required to demonstrate understanding of a broad knowledge base incorporating some theoretical recordkeeping concepts. The application is in relation to individuals working in a range of 'small' office environments where, in most cases, recordkeeping is only part of the individual's responsibilities; the unit addresses the less formal recordkeeping requirements of micro or small businesses or branches and technical operations centres of larger organisations.
Typically, the individual would report to a supervisor or manager within the organisation and be solely responsible for the development and implementation of business or records systems, including training users of the system.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	**Performance Criteria**
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Determine recordkeeping requirements	1.1 Identify and ***document*** core business, supporting activities, ***resources***, and ***business and social context*** using observation and ***consultation*** 1.2 Determine security and access requirements for ***business or records system*** content from analysis of organisation's activities 1.3 Analyse business documentation to determine organisational reporting and accountability requirements 1.4 Identify ***organisational functions and activities*** for which records must be kept, from analysis of business and context documentation 1.5 Determine nature, detail, and format of ***records*** (content and ***metadata***) for each organisational function and activity from analysis of the business and its context
2. Devise an appropriate recordkeeping system	2.1 Determine metadata needed to manage records (store, locate and retrieve) in a business or records system 2.2 Select scale and number of business or records systems appropriate to scale and nature of business operations 2.3 Select technological requirements of business or records systems appropriate to scale and nature of business operations 2.4 Select cost structure for business or records systems appropriate to scale, nature, and organisational cash flow requirements 2.5 Ensure maintenance, disposal and updating requirements of business or records system conform to scale, nature, and culture of the organisation 2.6 Select business or records system suited to projected growth of the organisation
3. Develop business rules and procedures to support operations	3.1 Develop rules for incorporating individual records and information (records capture) into the business or records system 3.2 Develop rules for deciding and recording retention periods and appropriate disposal actions for records 3.3 Develop and document ***procedures for the use of the system*** 3.4 Provide system users with training or instructions in the use of the business or records system, in line with the culture and scale of the organisation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to explain and clarify procedures, and to consult with users of a records or business system
- literacy skills to read and interpret record content, functions and problems
- problem-solving and analysis skills to identify requirements of business or records system.

Required knowledge

- key provisions of relevant legislation from all forms of government, regulations, standards and documentation that may affect aspects of business operations, such as:
  - AS 5044.1:2002 AGLS Metadata element set
  - AS 5090:2003 Work process analysis for recordkeeping
  - AS ISO 15489:2004 Records management
  - AS ISO 23081.1:2006 Information and documentation – Records management processes – Metadata for records – Principles
  - Australian Stock Exchange (ASX) Principles of Good Corporate Governance
  - ethical principles
  - codes of practice
  - privacy and freedom of information
  - archives and records legislation
  - occupational health and safety
  - environmental sustainability practices in business operations
- general principles and processes of records management and records management systems, such as:
  - systems of control
  - records continuum theory
  - mandate and ownership of business process
  - environmental context
  - records characteristics
- internal controls
- organisational functions, structure and culture
- organisational policies and strategies
- organisational technological base.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • translating business functions and reporting requirements into a brief that describes the requirements of a business or records system • developing a business or records system, including rules and procedures • knowledge of organisational functions, structure and culture.
Context of and specific resources for assessment	Assessment must ensure: • access to examples of records, recordkeeping systems and policies • access to workplace reference materials such as procedural manuals and company policies.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • demonstration of techniques • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of documentation outlining procedures developed for the use of the system • oral or written questioning to assess knowledge of general principles and processes of recordkeeping systems.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • administration units • other knowledge management units.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Documenting core business may involve identifying:	• authenticity, integrity, reliability and useability of records or other documents • diagrammatic representations • formal documents • hand written documents • informal communications • online instructions or computer-based format instructions that can be updated • paper-based manuals • other text.
Resources may include:	• human resources and their availability • location of resources currently in operation • physical resources • organisational policies and procedures • technological resources • those available for purchase or development.

Business and social context may include:	• clients or customers and their expectations
	• codes of ethics and codes of professional conduct specific to industry sector
	• community expectations
	• governance frameworks
	• industry sector characteristics and reporting requirements of that sector
	• internal and external accountability requirements
	• internal and external stakeholders whose interests must be taken into account
	• other relevant legislation and regulations, including those covering:
	  • business activity reporting
	  • business and income (PAYE) taxation
	  • corporation law reporting requirements
	  • environmental protection and waste management
	  • goods and services tax collection
	  • industrial relations

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	• occupational health and safety • privacy protection • statutory access rights and freedom of information • superannuation • environmentally sustainable business practice • social and ethical standards the community expects the organisation to meet.
Consultation may include organisation's:	• head office • local management • principals • staff.

Business or records systems may include:	• archival control systems
	• business systems
	• cash register-based systems
	• characteristics relating to:
	  • aggregations
	  • context
	  • entities
	  • metadata
	• current business or records systems
	• electronic records and document management system (ERDMS)
	• informal
	• paper-based accumulation and card systems
	• PC-based accounting systems, employee and tax records systems
	• proprietary recordkeeping package
	• storage facilities systems.

Organisational functions and activities that may be documented may include:	• asset management • conventional and email correspondence • customer relationship management • human resources management • invoicing and sales • legislative, regulatory and licensing compliance • marketing and promotion • purchasing and expenditure • research and development • risk management • stock control.
Records may include:	• different stages of use: • active

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	• archival
	• digital:
	  • remote drives
	  • servers
	  • CDs
	  • DVDs
	  • imaging systems
	  • PC-based applications
	  • mainframe
	• physical:
	  • audio-visual or multimedia
	  • graphic
	  • microform
	  • paper-based (acid free or multiple copies
	• variety of sources:
	  • already in the custody of the organisation
	  • in the process of being transferred between organisations.

Metadata are those records which are maintained about the records themselves and may include:	• activity classification terms • date, time, and location of record creation or registration into the system • identity of record creator • indexing and descriptive terms • record format • security and access information • unique identifiers for each record.
Procedures for the use of the system may include:	• how to use the business or records system • considering format and style • considering appropriateness for scale, nature, culture and number of operators who use the system.

Unit Sector(s)

Knowledge Management – Recordkeeping

Custom Content Section

Not applicable.

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BSBSMB402A Plan small business finances

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to develop a financial plan to support business viability. Specific legal requirements apply to the management of a small business.

Application of the Unit

Application of the unit	This work is undertaken by individuals who operate a small business. The unit is suitable for existing micro and small businesses or a department in a larger organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify costs, calculate prices and prepare profit statement	1.1. Identify and document ***costs*** associated with the production and delivery of the business' products/services 1.2. Calculate prices based on costs and profit margin, as an hourly charge out rate for labour or unit price for products 1.3. Calculate break-even sales point to establish business viability and profit margins 1.4. Identify appropriate ***pricing strategies*** in relation to market conditions to meet business profit targets 1.5. Prepare projected profit statement to supplement the business plan
2. Develop a FINANCIAL PLAN	2.1. Set ***profit targets***/***goals*** to reflect owner's desired returns 2.2. Identify working capital requirements necessary to attain profit projections 2.3. Identify non-current asset requirements and consider alternative asset management strategies 2.4. Prepare ***cash flow projections*** to enable business operation in accordance with business plan and ***legal requirements*** 2.5. Identify capital investment requirements accurately for each operational period 2.6. Select budget targets to enable ongoing monitoring of financial performance
3. Acquire finance	3.1. Identify start-up and ongoing financial requirements according to financial plan/budget 3.2. Identify ***sources of finance***, including potential ***financial backers***, to provide required liquidity for the business to complement business goals and objectives 3.3. Investigate cost of securing finance on optimal terms 3.4. Identify strategies to obtain finance as required to ensure financial viability of the business

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to interpret financial data
- communication skills to secure finance
- literacy skills to develop a financial plan and to interpret legal requirements and financial reports
- numeracy skills to calculate costs, prices, profit and other financial information
- research skills to identify costs and sources of finance.

Required knowledge

- break-even analysis
- costing for the business, including margin/mark-up, hourly charge out rates and unit costs
- financial decision making relevant to the business
- methods and relative costs of obtaining finance
- principles for preparation of balance sheets
- principles for preparation of cash flow forecasts
- principles for preparation of profit and loss statements
- purpose of financial reports
- relevant accounting terminology
- working capital cycles.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development of a financial plan which identifies the financial requirements of the business, including profit targets, cash flow projections and strategies for the acquisition of finance • knowledge of financial decision making relevant to the business.
Context of and specific resources for assessment	Assessment must ensure: • access to relevant documentation • candidate's individual circumstances and work in the context of establishing or running a small business, are the basis for assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • portfolio of evidence including financial plan and records • review of projected profit statement prepared to supplement the business plan • review of cash flow projections • oral or written questioning to asses knowledge of principles for preparation of cash flow forecasts.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBSMB401A Establish legal and risk management requirements of small business • BSBSMB404A Undertake small business planning • BSBSMB405A Monitor and manage small business operations • BSBSMB406A Manage small business finances.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Costs may include:	• direct/indirect costs • fixed, variable, semi-variable costs • overheads and employee costs
Pricing strategies may include:	• competitor analysis • cost/volume/profit analysis • cost factors • cost plus pricing • demand-based pricing • discounting • market conditions • penetration pricing • perceived value • product mix • skimming
Financial plan may include:	• analysis of sales by product/service, identifying where they were sold and to whom • cash flow estimates for each forward period • current financial state of the enterprise (or owner/operator) • estimates of profit and loss projections for each forward period • financial performance to date (if applicable) • likely return on investment • monthly, quarterly or annual returns • non-recurrent assets calculations • profit, turnover, capital and equity targets • projected profit targets, pricing strategies, margins • projections of likely financial results (budgeting) • projections, which may vary depending on the importance of such information and the stage in the life of the business • resources required to implement the proposed marketing and production strategies (staff,

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RANGE STATEMENT	
	materials, plant and equipment) • review of financial inputs required (sources and forms of finance) • risks and measures to manage or minimise risks • working, fixed, debt and equity capital • working in conjunction with external consultants e.g. investment analysts, accountants, financiers
Profit targets/goals may include:	• break-even point • cost of goods/services sold • gross profit/net profit • desired actual/notional salary for owners/managers • desired return on investment • sales turnover/gross fees or income
Cash flow projections may include:	• anticipated payments • anticipated receipts • customer credit policy/debt recovery • taxation provisions
Legal requirements may include:	• contractual arrangements (partnership agreements, trust deeds) • corporations law • industrial law (for payroll records) • taxation law
Sources of finance may include:	• personal, financial institutions, trade/industry sources • government sources, for example commonwealth and state/territory governments which provide various forms of technical and financial assistance including direct cash grants, loans, subsidies, tax concessions, and professional and technical advice
Financial backers may include:	• financiers/banks/lending institutions • leasing and hire purchase financiers • providers of venture capital • shareholders/partners/owners/family/friends

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Small and Micro Business

Co-requisite units

Co-requisite units		

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BSBSMB403A Market the small business

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to develop and implement marketing strategies, and to monitor and improve market performance. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This work is undertaken by individuals who operate a small business. This unit is suitable for micro and small businesses or a department in a larger organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop marketing strategies	1.1. Analyse the business and its key products or services to determine the focus of marketing activities, in accordance with the objectives of the business plan 1.2. Evaluate the customer base and target market for the small business as a basis for the ***marketing objectives and strategies*** 1.3. Determine marketing objectives and strategies that are ethically and culturally appropriate, in consultation with ***relevant people*** and in accordance with the business plan
2. Determine a marketing mix for the business	2.1. Balance product mix, volumes and pricing to optimise sales and profit 2.2. Evaluate the costs and benefits of using different ***distribution channels*** and/or providing different ***levels of customer service*** and consider the results in determining the ***marketing mix*** 2.3. Determine promotional activities to suit the target market 2.4. Consider customer needs and preferences in determining the marketing mix 2.5. Determine the marketing mix according to market and business needs
3. Implement marketing strategies	3.1. Brief persons involved in the marketing effort on their roles and responsibilities, to ensure the success of marketing strategies 3.2. Plan and implement ***promotional activities***, in accordance with marketing objectives and budgetary requirements
4. Monitor and improve marketing performance	4.1. Monitor marketing activities and evaluate business performance according to the objectives and targets of the business plan 4.2. Analyse ***performance gaps*** and take corrective action or set new targets 4.3. Encourage all relevant people to propose ways to improve marketing performance 4.4. Seek and analyse ***customer reaction*** to all aspects of the marketing mix, using culturally appropriate processes, to improve targeting and outcomes 4.5. Conduct ongoing research of customer requirements to identify opportunities for change and

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ELEMENT	PERFORMANCE CRITERIA
	improvement 4.6. Monitor and investigate changes in the market for new opportunities to aid business development

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to question, clarify and report • literacy and numeracy skills to research information, to analyse data and to interpret market data.
Required knowledge
• industry market trends • methods of analysing costs and benefits of marketing strategies • methods of developing marketing objectives and marketing mix • methods of monitoring customer satisfaction • relevant market analysis and research • relevant marketing concepts and methods.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • developing a marketing strategy and choosing a marketing mix for the small business that are culturally appropriate and that complement the business plan • implementing and monitoring the marketing strategy/plan to optimise the chances of small business success • knowledge of relevant marketing concepts and methods.
Context of and specific resources for assessment	Assessment must ensure: • access to relevant documentation • candidate's individual circumstances and work in the context of running a small business, are the basis for assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • portfolio of evidence including marketing strategy and monitoring of marketing performance • oral or written questioning to assess knowledge of industry market trends • review of analysis of performance gaps and corrective action taken or new targets set • review of promotional activities implemented.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBSMB404A Undertake small business planning.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Marketing objectives and strategies may include:	• achieving lower costs of production and distribution than competitors • creating a very different product line or service so that the business becomes a class leader in the industry • distribution • pricing, presentation and display of products/services • product design and packaging • product range and mix • promotion and advertising • pursuing cost leadership and/or product differentiation within a specialist market segment
Relevant people may include:	• accountant or other specialist services • family members, work team members, sub-contractors, community members • franchise agency • financial backers, clients • owner/operator, partners, directors, shareholders • regulatory bodies • trade or industry associations
Distribution channels may include:	• dealer, re-seller, franchisee • distributor, delivery service, mail order, telesales • self-access, wholesale, retail
Levels of customer service may include:	• after sales service • one-on-one personal service • sales assistance for problems/queries only
Marketing mix may include:	• distribution • level of service • pricing

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RANGE STATEMENT	
	• promotion • quality, range • safety features • technical features, design
Promotional activities may include:	• advertising in national, suburban or local newspapers • advertising on radio or television • canvassing • development of networks and strategic alliances • display posters • exhibitions, in-store promotions • involvement in community projects • mail drops • professional/industry journals • sponsorship • staff development programs to enhance customer service orientation • website • word of mouth, referral, testimonials
Performance gaps may include:	• over achievement of performance targets • under achievement of performance targets
Customer reaction may be determined through:	• customer meetings, focus groups • identification of new business opportunities • informal discussion • sales to contact ratio • survey/other feedback mechanisms • trend analysis

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Small and Micro Business

Co-requisite units

Co-requisite units		

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BSBSMB404A Undertake small business planning

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to research and develop an integrated business plan for achieving business goals and objectives. Specific legal requirements apply to the management of a small business.

Application of the Unit

Application of the unit	This work is undertaken by individuals who operate a small business. This unit is suitable for micro and small businesses or a department in a larger organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify elements of the business plan	1.1. Identify purpose of the ***business plan*** 1.2. Identify and review the essential components of the business plan 1.3. Identify and document ***business goals and objectives*** as a basis for measuring business performance
2. Develop a business plan	2.1. Research resources, legal and compliance requirements, specifically in relation to ***occupational health and safety*** (***OHS***), in accordance with business goals and objectives 2.2. Research market needs, and market size and potential 2.3. Identify sources and costs of finance, from the ***financial plan***, to provide required liquidity and profitability for the business 2.4. Identify methods, from the ***marketing strategies***, to promote the market exposure of the business 2.5. Identify methods/means of production/operation from the ***production***/***operations plan*** to conform with business goals and objectives 2.6. Identify ***staffing requirements*** to effectively produce/deliver products/services 2.7. Identify ***specialist services*** and sources of advice, where required, and cost in accordance with resources available
3. Develop strategies for minimising risks	3.1. Identify specific interests and objectives of ***relevant people*** and seek and confirm their support of the planned business direction 3.2. Identify and develop ***risk management strategies*** according to business goals and objectives, and relevant legal requirements 3.3. Develop ***contingency plan*** to address possible areas of non-conformance with the plan

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to assess business performance • literacy skills to enable interpretation of business information • numeracy skills to analyse data.
Required knowledge
• commonwealth, state/territory and local government legislative requirements relating to business operation, especially in regard to OHS and environmental issues, equal employment opportunity, industrial relations and anti-discrimination • methods of evaluation • OHS responsibilities and procedures for identifying hazards relevant to the business • planning processes • preparation of a business plan • principles of risk management relevant to business planning • reasons for and benefits of, business planning • relevant industry codes of practice • setting goals and objectives • types of business planning - feasibility studies; strategic, operational, financial and marketing planning.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development of a business plan which provides for finance, marketing and provision of products/services to facilitate the business goals and objectives • identification of and planning for, OHS and duty of care responsibilities • development of risk management strategies • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to relevant documentation • candidate's individual circumstances and work in the context of running a small business, are the basis for assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • portfolio of evidence including a business plan and risk management strategies • oral or written questioning to assess knowledge of OHS responsibilities and procedures for identifying hazards relevant to the business • demonstration of practical skills • review of documented business goals and objectives • review of contingency plans developed to address possible areas of non-conformance with the business plan.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBSMB401A Establish legal and risk management requirements of small business • BSBSMB402A Plan small business finances • BSBSMB403A Market the small business.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Business plan may include:	• business opportunities, which may be influenced by:
	  • amount and types of finance available
	  • expected financial viability
	  • skills of operator
	• details of ownership/management
	• finance, expenditure statement, balance sheet and cash flow forecast, projections for the initial years of operation assumptions underlying the business plan, expected level of inflation and taxation, expected trend of interest rate, capital expenditure and its timing, stock turnover, debtors collection period, creditor payment period, return on investment
	• level of risk involved, risk assessment and management
	• market focus of the business
	• marketing requirements
	• need to raise finance and requirements of lenders
	• organisation/operational arrangements
	• proposed size and scale of the business
	• recognition of any seasonal or cyclical (time-based) elements which are crucial to the success of the business
	• resources required and available
	• sources of funding
	• specialist services and sources of advice that may be required
	• staffing
	• stages in the business development

Business goals and objectives may include:	• customer needs/marketing projections • family or community benefits

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RANGE STATEMENT	
	• financial projections • goals, objectives, plans, systems and processes • lifestyle issues • market focus of the business • proposed size and scale of the business • short-, medium- or long-term goals • social responsibility
Occupational health and safety issues must include:	• identification of specific hazard issues such as occupational violence, security, manual handling, equipment and hazardous substances • management of the organisation and operation of OHS as part of the business plan • procedures for managing hazards in the workplace (identify, assess and control) • provisions for ensuring safety of members of the public and contractors visiting the premises/worksite
Financial plan may include:	• analysis of sales by product/service, identifying where they were sold and to whom • cash flow estimates for each forward period • current financial state of the enterprise (or owner/operator) • estimates of profit and loss projections for each forward period • financial performance to date (if applicable) • likely return on investment • monthly, quarterly or annual returns • non-recurrent assets calculations • profit, turnover, capital and equity targets • projected profit targets, pricing strategies, margins • projections of likely financial results (budgeting) • projections, which may vary depending on the importance of such information and the stage in the life of the business • resources required to implement the proposed marketing and production strategies (staff, materials, plant and equipment) • review of financial inputs required (sources

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RANGE STATEMENT	
	and forms of finance) • risks and measures to manage or minimise risks • working, fixed, debt and equity capital
Marketing strategies may include:	• achieving lower costs of production and distribution than competitors • creating a very different product line or service so that the business becomes a class leader in the industry • distribution • pricing, presentation and display of products/services • product design and packaging • product range and mix • promotion and advertising • pursuing cost leadership and/or product differentiation within a specialist market segment
Production/operations plan may include:	• customer requirements, market expectations, budgetary constraints • industrial relations climate and quality assurance considerations • means of supply and distribution • operational targets and action plan, which may include short-, medium- or long-term goals • options for production, delivery, technical and customer service and support
Staffing requirements may include:	• full-time, part-time staff, permanent, temporary or casual staff • owner/operator • sub-contractors or external advisers/consultants
Specialist services may include:	• accountants • business advisors and consultants • business brokers • contractors • government agencies • industry/trade associations • lawyers and providers of legal advice • mentors

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RANGE STATEMENT	
	• online gateways
Relevant people may include:	• clients • family members • franchise agency • owner/operator, partners, financial backers • regulatory bodies • suppliers • trade or industry associations
Risk management strategies may include:	• breach of contract, product liability • knowledge management • measures to manage risk including professional indemnity, securing appropriate insurance to cover loss of earnings through sickness/accidents, drought, flood, fire, theft • security systems to provide physical security of premises, plant, equipment, goods and services • security of intellectual property
Risk management strategies must include:	• OHS requirements
Contingency plan may include:	• disturbances to cash flow, supply and/or distribution • sickness or personal considerations

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Small and Micro Business

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Co-requisite units

Co-requisite units		

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BSBSMB405B Monitor and manage small business operations

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Training Package version 6.0* Revised unit. Required knowledge and Range Statement changed to include environmentally sustainable practices Replaces BSBSMB405A Monitor and manage small business operations

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to operate a small business and to implement a business plan. The strategies involve monitoring, managing and reviewing operational procedures.
Specific legal requirements apply to the management of a small business.

Application of the Unit

This work is undertaken by individuals who operate a small business.
The unit is suitable for existing micro and small businesses or a department in a larger organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Develop o***perational strategies and procedures***	1.1 Develop an action plan to provide a clear and coherent direction, in accordance with the ***business goals and objectives*** 1.2 Identify ***occupational health and safety (OHS) and environmental issues*** and implement strategies to minimise risk factors 1.3 Develop a ***quality system*** for the business in line with industry standards, compliance requirements and cultural criteria 1.4 Develop performance measures and ***operational targets*** to conform with the business plan 1.5 Develop strategies for innovation, including the utilisation of existing, new or emerging technologies, where practicable, to optimise business performance
2. Implement operational strategies and procedures	2.1 Implement systems and key performance indicators/targets to monitor business performance and customer satisfaction 2.2 Implement systems to control stock, expenditure/cost, wastage/shrinkage and risks to health and safety in accordance with the business plan 2.3 Maintain staffing requirements, where applicable, within budget to maximise productivity 2.4 Carry out the provision of goods/services in accordance with established legal, ethical cultural and ***technical standards*** 2.5 Provide goods/services in accordance with time, cost and quality specifications, and customer requirements 2.6 Apply quality procedures to address product/service and customer requirements
3. Monitor business performance	3.1 Regularly monitor/review the achievement of operational targets to ensure optimum business performance, in accordance with the business plan goals and objectives 3.2 Review systems and structures, with a view to more effectively supporting business performance 3.3 Investigate and analyse operating problems to establish causes and implement changes as required as part of the business quality system 3.4 Amend operational policies and procedures to incorporate corrective action
4. Review business operations	4.1 Review and adjust business plan, as required, to maintain business viability, in accordance with business goals and objectives

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	4.2 Clearly record proposed changes to aid future planning and evaluation 4.3 Undertake ongoing research into new business opportunities and adjust business goals and objectives as new business opportunities arise

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to develop criteria and targets for the business plan
- communication skills to question, clarify and report
- literacy skills to interpret legal requirements, company policies and procedures
- numeracy skills to manage performance information and to control the finances
- technology skills to use relevant business equipment.

Required knowledge

- methods for developing and maintaining networks
- methods for implementing operation and revenue control systems
- methods for monitoring performance and implementing improvements
- OHS responsibilities and procedures for managing hazards
- principles of risk management relevant to the business, including risk assessment
- quality system principles and methods
- relevant industry codes of practice
- relevant marketing, sales and financial concepts
- relevant performance measures
- role of innovation
- systems to manage staff, stock, expenditure, services and customer service
- environmentally sustainable business practice and operation
- technical or specialist skills relevant to the business operation.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • developing strategies and procedures to successfully manage the operation of the business • making appropriate adjustments to the business operations as required • knowledge of quality system principles and methods.
Context of and specific resources for assessment	Assessment must ensure: • access to relevant documentation • candidate's individual circumstances and work in the context of running a small business, are the basis for assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • portfolio of evidence including operational strategies and procedures • oral or written questioning to assess knowledge of principles of risk management relevant to the business, including risk assessment • review of analysis of operating problems (establishing causes and implementing changes as required as part of the business quality system) • review of records proposing changes to the business operations.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBSMB406A Manage small business finances • BSBSMB407A Manage a small team.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Operational strategies and procedures may be determined by:	• business premises (size, location, layout) • financial control systems and procedures • management and administrative systems and procedures • methods/techniques/technology • physical and natural resources • plant and equipment , including OHS requirements • premises, plant and equipment, which may be new or previously owned • purchase (sole or shared ownership) or leasing • raw materials • requirements, which may be one-off requirements or recurrent requirements (such as equipment maintenance) specific to the nature of the business • technology • environmentally sustainable principles of business operation • use of existing, new and emerging technologies including e-commerce.
Business goals and objectives may include:	• customer needs/marketing projections • family or community benefits • financial projections • goals, objectives, plans, systems and processes • lifestyle issues • proposed size and scale of the business, market focus of the business • short-, medium- or long-term goals • social responsibility.
Occupational health and safety and environmental issues must include:	• controls, which may include instructions to workplace personnel concerning site hazards and controls, material safety data sheets, use of personal protective equipment, vehicle access, signs and barricades, traffic control, outside contractors • establishment and maintenance of procedures for assessing and controlling risks • establishment and maintenance of procedures for

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	identifying risks to health and safety • environmentally sustainable purchase and supply of goods and services • waste and by-products.
Quality system may include:	• manual or computer quality control systems • quality assurance/management approaches • random inspections and assessments of goods and services against predetermined standards • random inspections and assessments of processes against predetermined standards • random sampling and follow-up of customers.
Operational targets may include:	• external targets, which may relate to market share and positioning and may involve exploring new markets, building national or international trade links • internal targets, which may relate to size, quality, quantity and diversity, wages to sales, sales to area/stock levels/stock turnover/average debtor payment periods and levels • staffing level and skills mix • targets, which may be short-, medium- or long-term.
Technical standards may include:	• current and generally agreed descriptions of what the product/service is, how it should be produced/delivered and the environmental sustainability, quality, safety, efficiency or other measures to determine the activity is done effectively.

Unit Sector(s)

Management and Leadership – Small and Micro Business

Custom Content Section

Not applicable.

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BSBSUS201A Participate in environmentally sustainable work practices

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to effectively measure current resource use and to carry out improvements including reducing the negative environmental impact of work practices. This unit requires the ability to access industry information, and applicable legislative and occupational health and safety (OHS) guidelines. While no licensing, legislative, regulatory or certification requirements apply holistically to this unit at the time of publication, relevant national, state and territory legislation, regulations and codes of practice impact upon this unit.

Application of the Unit

Application of the unit	This unit applies to operators/team members under supervision or guidance, who are required to follow workplace procedures and instructions, and to work in an environmentally sustainable manner. It covers: efficient resource use potential environmental hazards regulatory compliance improving environmental performance (within the scope of competency, authority and own level of responsibility). It addresses the knowledge, processes and techniques necessary to participate in environmentally sustainable work practices.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify current resource use	1.1. Identify workplace ***environmental and resource efficiency issues*** 1.2. Identify resources used in own work role 1.3. Document and measure current usage of resources using ***appropriate techniques*** 1.4. Record and file documentation measuring current usage, using technology (such as software systems) where applicable 1.5. Identify and report workplace environmental hazards to appropriate personnel
2. Comply with environmental regulations	2.1. Follow workplace procedures to ensure ***compliance*** 2.2. Report breaches or potential breaches to appropriate personnel
3. Seek opportunities to improve resource efficiency	3.1. Follow ***organisational plans*** to improve environmental practices and resource efficiency 3.2. Work as part of a team, where relevant, to identify possible areas for improvements to work practices in own work area 3.3. Make ***suggestions*** for improvements to workplace practices in own work area

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to comply with all relevant legislation associated with job specifications and procedures
- communication and problem-solving skills to question, seek clarification and make suggestions relating to work requirements and efficiency
- communication and teamwork skills to recognise procedures; to follow instructions; to respond to change, such as current workplace environmental/sustainability frameworks; and to support team work and participation in a sustainable organisation
- literacy, numeracy and technology skills to interpret workplace information in relation to work role, and to document and measure resource use
- technology skills to select and use technology appropriate for a task.

Required knowledge

- environmental and resource hazards/risks
- environmental or sustainability legislation, regulations and codes of practice applicable to own work role
- OHS issues and requirements
- organisational structure, and reporting channels and procedures
- relevant environmental and resource efficiency systems and procedures
- sustainability in the workplace
- terms and conditions of employment including policies and procedures, such as daily tasks, employee and employer rights, equal opportunity.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • accessing, interpreting and complying with a range of environment/sustainability legislation and procedural requirements relevant to daily responsibilities • accurately following organisational information to participate in and support an improved resource efficiency process and reporting as required • developing and/or using tools such as inspection checklists, to collect and measure relevant information on organisation resource consumption, within work role • identifying organisational improvements by applying efficient resource use to daily activities • knowledge of environmental and resource hazards/risks.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • evidence is relevant to the particular workplace role, including work area, equipment, systems, and documentation • review of current work area directly relating to own work, to assess measurement of resources used, hazards and compliance • individual or team discussion about potential for increased resource efficiency within current work area • access to workplace documents, information and resources (such as compliance obligations, enterprise plans, work responsibilities).
Method of assessment	A range of assessment methods should be used t assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace

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EVIDENCE GUIDE	
	reports of on-the-job performance by the candidate • observation of demonstrated techniques over time and in a range of situations • analysis of responses to case studies and scenarios • review of documentation measuring current resource usage • evaluation of techniques used to document and measure current usage of resources • review of identified and reported workplace environmental hazards • evidence of active participation in organisational plans to improve environmental practices and resource efficiency.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBINN201A Contribute to workplace innovation • BSBSMB301A Investigate micro business opportunities • BSBWOR202A Organise and complete daily work activities.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Environmental and resource efficiency issues may include:	• maximising opportunities to improve business environmental performance • minimising environmental risks • promoting more efficient production and consumption of natural resources, for example minimising waste by participating in or using a waste management system • using resources efficiently such as material usage, energy usage (seeking alternative sources of energy or energy conservation) or efficient water usage
Appropriate techniques may include:	• examining and documenting resources in work area • examining invoices from suppliers • examining relevant information and data • measuring resource usage under different conditions • reports from other parties involved in the process of identifying and implementing improvements

Compliance may include:	• meeting relevant laws, by-laws and regulations or best practice to support compliance in environmental performance and sustainability at each level as required (such as Environmental Protection or Biodiversity Conservation Act):
	  • international
	  • commonwealth
	  • state/territory
	  • local government
	  • industry
	  • organisation

Organisational plans may	• documented policies and procedures • work plans to minimise waste or to increase

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RANGE STATEMENT	
include:	efficiency of resources such as a green office program, supply chain program for purchasing sustainable products or an environmental management framework
Suggestions may include ideas that help to:	• improve energy efficiency • increase use of renewable, recyclable, reusable and recoverable resources • maximise opportunities such as use of solar power or other alternative forms of energy, where appropriate • prevent and minimise risks • reduce emissions of greenhouse gases • reduce use of non-renewable resources

Unit Sector(s)

Unit sector	

Competency field

Competency field	Industry Capability - Sustainability

Co-requisite units

Co-requisite units		

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BSBSUS301A Implement and monitor environmentally sustainable work practices

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to effectively analyse the workplace in relation to environmentally sustainable work practices and to implement improvements and monitor their effectiveness. This unit requires the ability to access industry information, applicable legislative and occupational health and safety (OHS) guidelines. While no licensing, legislative, regulatory or certification requirements apply holistically to this unit at the time of publication, relevant national, state and territory legislation, regulations and codes of practice impact upon this unit.

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Application of the Unit

Application of the unit	This unit applies to those with responsibility for a specific area of work or who lead a work group or team. It addresses the knowledge, processes and techniques necessary to implement and monitor environmentally sustainable work practices, including the development of processes and tools, such as: • identifying areas for improvement • developing plans to make improvements • implementing and monitoring improvements in environmental performance. A person who demonstrates competence in this unit must be able to provide evidence of the ability to implement and monitor integrated environmental and resource efficiency management policies and procedures within an organisation. Evidence must be strictly relevant to the particular workplace role.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Investigate current practices in relation to resource usage	1.1. Identify environmental regulations applying to the enterprise 1.2. Analyse procedures for assessing ***compliance*** with environmental/sustainability regulations 1.3. Collect information on environmental and resource efficiency systems and procedures, and provide to the work group where appropriate 1.4. Collect, analyse and organise information from a range of ***sources*** to provide information/advice and tools/resources for improvement opportunities 1.5. Measure and document current resource usage of members of the work group 1.6. Analyse and document current ***purchasing strategies*** 1.7. Analyse current work processes to access information and data to assist in identifying areas for improvement
2. Set targets for improvements	2.1. Seek input from ***stakeholders***, ***key personnel and specialists*** 2.2. Access external sources of information and data as required 2.3. Evaluate alternative solutions to workplace environmental issues 2.4. Set efficiency targets
3. Implement performance improvement strategies	3.1. Source and use appropriate ***techniques and tools*** to assist in achieving efficiency targets 3.2. Apply continuous improvement strategies to own work area of responsibility, including ideas and possible solutions to communicate to the work group and management 3.3. Implement and integrate ***environmental and resource efficiency improvement plans*** for own work group with other operational activities 3.4. Supervise and support team members to identify possible areas for improved practices and resource efficiency in work area 3.5. Seek ***suggestions*** and ideas about environmental and resource efficiency management from stakeholders and act upon where appropriate 3.6. Implement costing strategies to fully value

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ELEMENT	PERFORMANCE CRITERIA
	environmental assets
4. Monitor performance	4.1. Use and/or develop evaluation and monitoring, tools and technology 4.2. Document and communicate outcomes to report on efficiency targets to key personnel and stakeholders 4.3. Evaluate strategies and improvement plans 4.4. Set new efficiency targets, and investigate and apply new tools and strategies 4.5. Promote successful strategies and reward participants where possible

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to analyse problems, to devise solutions and to reflect on approaches taken
- change management skills
- communication skills to answer questions, clarify and acknowledge suggestions relating to work requirements and efficiency
- communication/consultation skills to support information flow from stakeholders to the work group
- innovation skills to identify improvements, to apply knowledge about resource use to organisational activities and to develop tools
- literacy skills to comprehend documentation, to interpret environmental and energy efficiency requirements, to create tools to measure and monitor improvements and to report outcomes
- numeracy skills to analyse data on organisational resource consumption and waste product volumes
- planning and organising skills to implement environmental and energy efficiency management polices and procedures relevant to own work area
- problem-solving skills to devise approaches to improved environmental sustainability and to develop alternative approaches as required
- technology skills to operate and shut down equipment; where relevant, to use software systems for recording and filing documentation to measure current usage; and to use word processing and other basic software for interpreting charts, flowcharts, graphs and other visual data and information
- supervisory skills to work effectively with a team

Required knowledge

- best practice approaches relevant to own area of responsibility and industry
- compliance requirements within work area for all relevant environmental/sustainability legislation, regulations and codes of practice including resource hazards/risks associated with work area, job specifications and procedures
- environmental and energy efficiency issues, systems and procedures specific to industry practice
- external benchmarks and support for particular benchmarks to be used within organisation, including approaches to improving resource use for work area and expected outcomes
- OHS issues and requirements
- organisational structure and reporting channels and procedures
- quality assurance systems relevant to own work area
- strategies to maximise opportunities and to minimise impact relevant to own work

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REQUIRED SKILLS AND KNOWLEDGE
area • supply chain procedures • terms and conditions of employment including policies and procedures, such as daily tasks, work area responsibilities, employee, supervisor and employer rights, equal opportunity

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • knowledge of relevant compliance requirements within work area • developing plans to make improvements • planning and organising work group activities in relation to measuring current use and devising strategies to improve usage • monitoring resource use and improvements for environmental performance relative to work area and supervision • ensuring appropriate action is taken within work area in relation to environmental/sustainability compliance and potential hazards • implementing new approaches to work area in an effort to resolve and improve environmental and resource efficiency issues and reporting as required.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to a range of environment/sustainability legislation, standards, guidelines and procedural requirements relevant to specific work area, daily responsibilities and supervision • access to a range of information, workplace documentation and resources such as compliance obligations, organisation plans, work supervision and responsibilities • access to reports from other parties involved in the process of identifying and implementing improvements • evidence is relevant to the particular workplace role, including work area, staff, stakeholders, equipment, systems and documentation.
Method of assessment	A range of assessment methods should be used t assess practical skills and knowledge. The following examples

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EVIDENCE GUIDE	
	are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • response to case studies • review of reports of activities of work group in relation to measuring resource use and developing improvement strategies • review of work plans outlining approaches to improved practices with documented benchmarks • analysis of the way in which advice is sought and suggestions are made about improvements • observation over time and in a range of situations in relation to review of overall work area and staff, to assess and measure resource use, hazards and compliance • review of checklists to identify and assess resource usage at the beginning and end of the unit; reports on meetings around procedures and improvement processes and monitoring within the workplace; lists of environmental hazards/risks or inefficiencies or opportunities for improvements identified in the workplace • analysis of implementation of programs such as a green office program, supply chain program for purchasing sustainable products, or an environmental management framework • oral or written questioning to assess knowledge of environmental and energy efficiency issues, systems and procedures specific to industry practice.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBATSIC411C Communicate with the community • BSBINN301A Promote innovation in a team environment • BSBLED401A Develop teams and individuals • BSBMGT402A Implement operational plan • BSBMGT403A Implement continuous improvement • BSBRSK401A Identify risk and apply risk management processes.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Compliance may include:	• meeting relevant laws, by-laws and regulations or best practice or codes of practice to support compliance in environmental performance and sustainability at each level as required (such as Environmental Protection or Biodiversity Conservation Act):
	  • international
	  • commonwealth
	  • state/territory
	  • industry
	  • organisation.

Sources may include:	• organisation specifications • regulatory sources • relevant stakeholders • resource use.
Purchasing strategies may include:	• influencing suppliers to take up environmental sustainability approaches • researching and participating in programs such as a supply chain program to purchase sustainable products.

Stakeholders, ***key personnel and specialists*** may include:	• individuals and groups both inside and outside the organisation who have direct or indirect interest in the organisation's conduct, actions, products and services, including:
	  • customers
	  • employees at all levels of the organisation
	  • government
	  • investors
	  • local community
	  • other organisations
	  • suppliers
	• key personnel within the organisation, and specialists outside the organisation who may

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RANGE STATEMENT	
	have particular technical expertise.
Techniques and tools may include:	• examination of invoices from suppliers • examination of relevant information and data • measurements made under different conditions • others as appropriate to the specific industry context.

Environmental and resource efficiency improvement plans may include:	• addressing environmental and resource sustainability initiatives such as environmental management systems, action plans, green office programs, surveys and audits
	• applying the waste management hierarchy in the workplace
	• determining organisation's most appropriate waste treatment including waste to landfill, recycling, re-use, recoverable resources and wastewater treatment
	• initiating and/or maintaining appropriate organisational procedures for operational energy consumption, including stationary energy and non-stationary (transport)
	• preventing and minimising risks, and maximising opportunities such as:
	  • improving resource/energy efficiency
	  • reducing emissions of greenhouse gases
	• reducing use of non-renewable resources
	• referencing standards, guidelines and approaches such as:
	  • ecological footprinting
	  • Energy Efficiency Opportunities Bill 2005
	  • Global Reporting Initiative
	  • green office program - a cultural change program
	  • green purchasing
	  • Greenhouse Challenge Plus (Australian government initiative)
	  • ISO 14001:1996 Environmental management systems life cycle analyses
	  • product stewardship
	  • supply chain management
	  • sustainability covenants/compacts
	  • triple bottom line reporting.

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RANGE STATEMENT	

Suggestions may include ideas that help to:	• prevent and minimise risks and maximise opportunities such as:
	  • usage of solar or renewable energies where appropriate
	  • reducing emissions of greenhouse gases
	  • reducing use of non-renewable resources
	  • making more efficient use of resources, energy and water
	• maximising opportunities to re-use, recycle and reclaim materials
	• identifying strategies to offset or mitigate environmental impacts:
	  • purchasing carbon credits
	  • energy conservation
	  • reducing chemical use
	  • reducing material consumption
	• expressing purchasing power through the selection of suppliers with improved environmental performance e.g. purchasing renewable energy
	• eliminating the use of hazardous and toxic materials.

Unit Sector(s)

Unit sector	

Competency field

Competency field	Industry Capability - Sustainability

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Co-requisite units

Co-requisite units		

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BSBWOR203B Work effectively with others

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Training Package version 6.0.* Revised unit. Required knowledge and Range Statement changed to include environmentally sustainable practices Replaces BSBWOR203A Work effectively with others

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to work in a group environment promoting team commitment and cooperation, supporting team members and dealing effectively with issues, problems and conflict.

Application of the Unit

This unit applies to individuals who perform a range of routine tasks using a limited range of practical skills and fundamental knowledge of teamwork in a defined context under direct supervision or with limited individual responsibility.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	**Performance Criteria**
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

Elements and Performance Criteria

1. Develop effective workplace relationships	1.1 Identify own ***responsibilities and duties*** in relation to ***workgroup members*** and undertake activities in a manner that promotes cooperation and good relationships 1.2 Take time and resource constraints into account in fulfilling work requirements of self and others 1.3 Encourage, acknowledge and act upon constructive ***feedback*** provided by others in the workgroup
2. Contribute to workgroup activities	2.1 Provide ***support to team members*** to ensure workgroup goals are met 2.2 Contribute constructively to workgroup goals and tasks according to organisational requirements 2.3 Share ***information*** relevant to work with workgroup to ensure designated goals are met 2.4 Identify and plan ***strategies/opportunities for improvement*** of workgroup in liaison with workgroup
3. Deal effectively with issues, problems and conflict	3.1 Respect differences in personal values and beliefs and their importance in the development of relationships 3.2 Identify any linguistic and cultural differences in communication styles and respond appropriately 3.3 Identify issues, problems and conflict encountered in the workplace 3.4 Seek assistance from workgroup members when issues, problems and conflict arise and suggest possible ways of dealing with them as appropriate or refer them to the appropriate person

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- literacy skills to read and understand the organisation's policies and work procedures, to write simple instructions for particular routine tasks and to interpret information gained from correspondence
- communication skills to request advice, to receive feedback and to work with a team
- technology skills to select and use technology appropriate to a task
- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety (OHS)
  - environmentally sustainable work practices
- organisational policies, plans and procedures
- workgroup member responsibilities and duties, and relationship to individual responsibilities and duties.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • providing support to team members to ensure goals are met • seeking feedback from clients and/or colleagues and taking appropriate action • knowledge of appropriate conflict resolution techniques.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of customer complaints or staff conflict.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • analysis of responses to case studies and scenarios • demonstration of techniques • observation of demonstrated techniques in resolving conflict • observation of presentations • review of documentation identifying and planning strategies/opportunities for workgroup improvement.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • interpersonal communication units • other industry capability units.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Responsibilities and duties may include:	• Code of Conduct • job description and employment arrangements • organisation's policy relevant to work role • skills, training and competencies • supervision and accountability requirements including OHS • environmentally sustainable working practices • team structures.
Workgroup members may include:	• coach/mentor • other members of the organisation • peers/work colleagues/team/enterprise • supervisor or manager.
Feedback on performance may include:	• formal/informal performance appraisals • obtaining feedback from clients • obtaining feedback from supervisors and colleagues • personal, reflective behaviour strategies • routine organisational methods for monitoring service delivery.
Support to team members may include:	• explaining/clarifying • helping colleagues • problem-solving • providing encouragement • providing feedback to a team member • undertaking extra tasks if necessary.
Information to be shared may include:	• acknowledging satisfactory performance • acknowledging unsatisfactory performance • assisting a colleague • clarifying the organisation's preferred task completion methods • encouraging colleagues • open communication channels • workplace hazards, risks and controls.
Strategies/opportunities for	• career planning/development • coaching, mentoring and/or supervision

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improvement may include:	• formal/informal learning programs • internal/external training provision • performance appraisals • personal study • recognition of current competence (RCC)/skills recognition/initial assessment • work experience/exchange/opportunities • workplace skills assessment.

Unit Sector(s)

Industry Capability – Workplace Effectiveness

Custom Content Section

Not applicable.

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BSBWOR401A Establish effective workplace relationships

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to collect, analyse and communicate information and to use that information to develop and maintain effective working relationships and networks, with particular regard to communication and representation. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	Frontline managers play an important role in developing and maintaining positive relationships in internal and external environments so that customers, suppliers and the organisation achieve planned outputs and outcomes. They play a prominent part in motivating, mentoring, coaching and developing team cohesion through providing leadership for the team and forming the bridge between the management of the organisation and team members. At this level, work will normally be carried out within routine and non routine methods and procedures, which require planning and evaluation, and leadership and guidance of others.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Collect, analyse and communicate information and ideas	1.1. Collect relevant ***information*** from appropriate sources and analyse and share with the work team to improve work performance 1.2. Communicate ideas and information in a manner which is appropriate and sensitive to the cultural and social diversity of the audience and any specific needs 1.3. Implement ***consultation processes*** to encourage employees to contribute to issues related to their work, and promptly relay feedback to the work team in regard to outcomes 1.4. Seek and value contributions from internal and external sources in developing and refining new ideas and approaches 1.5. Implement ***processes*** to ensure that issues raised are resolved promptly or referred to ***relevant personnel*** as required
2. Develop trust and confidence	2.1. Treat all internal and external contacts with integrity, respect and empathy 2.2. Use the ***organisation's social***, ***ethical and business standards*** to develop and maintain effective relationships 2.3. Gain and maintain the trust and confidence of ***colleagues***, ***customers and suppliers*** through competent performance 2.4. Adjust interpersonal styles and methods to meet organisation's social and cultural environment 2.5. Encourage other members of the work team to follow examples set, according to ***organisation's policies and procedures***
3. Develop and maintain networks and relationships	3.1. Use ***networks*** to identify and build relationships 3.2. Use networks and other work relationships to provide identifiable benefits for the team and organisation
4. Manage difficulties into positive outcomes	4.1. Identify and analyse difficulties, and take action to rectify the situation within the requirements of the organisation and relevant legislation 4.2. Guide and support colleagues to resolve work difficulties 4.3. Regularly review and improve ***workplace outcomes***

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ELEMENT	PERFORMANCE CRITERIA
	in consultation with relevant personnel 4.4. Manage ***poor work performance*** within the organisation's processes 4.5. Manage conflict constructively within the organisation's processes

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- coaching and mentoring skills to provide support to colleagues
- literacy skills to research, analyse, interpret and report information
- relationship management and communication skills to:
  - deal with people openly and fairly
  - forge effective relationships with internal and/or external people, and to develop and maintain these networks
  - gain the trust and confidence of colleagues
  - respond to unexpected demands from a range of people
  - use supportive and consultative processes effectively.

Required knowledge

- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety (OHS), and environmental issues, equal opportunity, industrial relations and anti-discrimination
- theory associated with managing work relationships to achieve planned outcomes:
  - developing trust and confidence
  - maintaining consistent behaviour in work relationships
  - understanding the cultural and social environment
  - identifying and assessing interpersonal styles
  - establishing, building and maintaining networks
  - identifying and resolving problems
  - resolving conflict
  - managing poor work performance
  - monitoring, analysing and introducing ways to improve work relationships.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • range of methods and techniques for communicating information and ideas to a range of stakeholders • range of methods and techniques for developing positive work relationships that build trust and confidence in the team • accessing and analysing information to achieve planned outcomes • techniques for resolving problems and conflicts and dealing with poor performance • knowledge of the theory associated with managing work relationships to achieve planned outcomes.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • demonstration of techniques in managing poor performance and communicating effectively • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of performance in role plays • observation of presentations • oral or written questioning to assess knowledge of relevant legislation • review of consultation processesimplemented to encourage employees to contribute to issues related to their work • review of documentation outlining reviewing ofworkplace outcomes.
Guidance information for	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended,

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EVIDENCE GUIDE	
assessment	for example: • other units from the Certificate IV in Frontline Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Information may include:	• data appropriate to work roles and organisational policies that is shared and retrieved in writing or verbally, electronically or manually such as:
	  • archived, filed and historical background data
	  • individual and team performance data
	  • marketing and customer related data
	  • planning and organisational documents including the outcomes of continuous improvement and quality assurance
	  • policies and procedures

Consultation processes may include:	• feedback to the work team and relevant personnel in relation to outcomes of the consultation process • opportunities for all employees to contribute to ideas and information about organisational issues
Processes to ensure that issues raised are resolved promptly or referred may include:	• conducting informal meetings • coordinating surveys or questionnaires • distributing newsletters or reports • exchanging informal dialogue with relevant personnel • participating in planned organisational activities
Relevant personnel may include:	• managers • OHS committee and other people with specialist responsibilities • other employees • supervisors • union representatives/groups
Organisation's social, ***ethical and business standards*** may refer to:	• implied standards such as honesty and respect relative to the organisational culture and generally accepted within the wider

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RANGE STATEMENT	

	community
	• rewards and recognition for high performing staff
	• standards expressed in legislation and regulations such as anti-discrimination legislation
	• written standards such as those expressed in:
	  • code of workplace conduct/behaviour
	  • dress code
	  • policies
	  • statement of workplace values
	  • vision and mission statements

Colleagues, ***customers and suppliers*** may include:	• both internal and external contacts • employees at the same level and more senior managers • people from a wide variety of social, cultural and ethnic backgrounds • team members
Organisation's policies and procedures may refer to:	• Materials Safety Data Sheets • organisational tasks and activities undertaken to meet performance outcomes • sets of accepted actions approved by the organisation • Standard Operating Procedures
Networks may be:	• established structures or unstructured arrangements and may include business or professional associations • informal or formal and with individuals or groups • internal and/or external
Workplace outcomes may include:	• OHS processes and procedures • performance of the work team
Poor work performance may refer to:	• individual team members • organisation as a whole • self • whole work team

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Unit Sector(s)

Unit sector	

Competency field

Competency field	Industry Capability - Workplace Effectiveness

Co-requisite units

Co-requisite units		

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BSBWOR404B Develop work priorities

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to plan one's own work schedules, to monitor and to obtain feedback on work performance and development. It also addresses the requirement to take responsibility for one's own career planning and professional development. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals who are required to design their own work schedules and work plans, and to establish priorities for their work. They will typically hold some responsibilities for the work of others and have some autonomy in relation to their own role.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and complete own work schedule	1.1. Prepare ***Workgroup*** plans which reflect consideration of resources, client needs and workgroup targets 1.2. Analyse and incorporate ***Work objectives*** and priorities into personal schedules and responsibilities 1.3. Identify ***Factors affecting the achievement of work objectives*** and establish contingencies and incorporate them into work plans 1.4. Efficiently and effectively use ***Business technology*** to manage and monitor planning completion and scheduling of tasks
2. Monitor own work performance	2.1. Identify and analysed personal performance through self-assessment and feedback from others on the achievement of work objectives 2.2. Seek and evaluate ***Feedback on performance*** from colleagues and clients in the context of individual and group requirements 2.3. Routinely identify and report on variations in the quality of service and performance in accordance with organisational requirements
3. Coordinate professional development	3.1. Assess personal knowledge and skills against organisational benchmarks to determine development needs and priorities 3.2. Research and identify sources and plan for opportunities for improvement in consultation with colleagues 3.3. Use ***Feedback*** to identify and develop ways to improve competence within available opportunities 3.4. Identify, access and complete ***professional development activities*** to assist career development 3.5. Store and maintain records and documents relating to achievements and assessments in accordance with organisational requirements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to recognise and develop new and necessary skills and knowledge
- literacy skills to understand the organisation's policies, procedures and communications, to write personal work plans and professional development plans, and to request and receive feedback about performance
- organising skills to prioritise, manage time and meet deadlines
- problem solving skills to develop contingency plans

Required knowledge

- knowledge of relevant business technology applications to schedule tasks and plan work
- knowledge of techniques to prepare personal plans and establish priorities
- methods to identify and prioritise personal learning needs
- understanding of a range of professional development options
- understanding of methods to elicit, analyse and interpret feedback
- understanding of methods to evaluate own performance

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • preparing and communicating own work plan • scheduling work objectives and tasks to support the achievement of goals • seeking and acting on feedback from clients and colleagues • reviewing own work performance against achievements through self-assessment • accessing learning opportunities to extend own personal work competencies • using business technology to monitor self development.
Context of and specific resources for assessment	Assessment must ensure: • the learner and trainer should have access to appropriate documentation and resources normally used in the workplace
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of performance in role plays • observation of presentations • review of work and professional development plans.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • Other units from the Certificate IV in Frontline Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Workgroup plans may include:	• budgetary plans • production plans • reporting plans • sales plans • team and individual learning goals • team participation • work schedules
Work objectives may include:	• budgetary targets • production targets • reporting deadlines • sales targets • team and individual learning goals • team participation
Factors affecting the achievement of work objectives may include:	• budget constraints • competing work demands • environmental factors such as time, weather, etc • personnel • resource and materials availability • technology/equipment breakdowns • unforeseen incidents
Business technology may include:	• computer applications • computers • email and internet/intranet/extranet • facsimile machines • modems • personal schedules • photocopiers • printers • scanners
Feedback on performance may include:	• formal/informal performance appraisals • obtaining comments from clients • obtaining comments from supervisors and

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RANGE STATEMENT	
	colleagues • personal, reflective behaviour strategies • routine organisational methods for monitoring service delivery
Professional development activities may include:	• career planning/development • coaching, mentoring and/or supervision • formal/informal learning programs • internal/external training provision • performance appraisals • personal study • Recognition of Prior Learning • work experience/exchange/opportunities • workplace skills assessment

Unit Sector(s)

Unit sector	

ELEMENT	PERFORMANCE CRITERIA

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBWOR501B Manage personal work priorities and professional development

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage own performance and professional development. Particular emphasis is on setting and meeting priorities, analysing information and using a range of strategies to develop further competence. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to managers and focuses on the need for managers to be organised, focussed and skilled, in order to effectively manage the work of others. As such it is an important unit for most managers, particularly as managers serve as role models and have a significant influence on the work culture and patterns of behaviour.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish personal work goals	1.1. Serve as a positive role model in the workplace through personal work planning and organisation 1.2. Ensure personal work goals, plans and activities reflect the organisation's plans, and ***own responsibilities and accountabilities*** 1.3. Measure and maintain personal performance in varying work conditions, work contexts and contingencies
2. Set and meet own work priorities	2.1. Take initiative to prioritise and facilitate competing demands to achieve personal, team and organisational goals and objectives 2.2. Use ***technology*** efficiently and effectively to manage work priorities and commitments 2.3. Maintain appropriate work-life balance, and ensure stress is effectively managed and health is attended to
3. Develop and maintain professional competence	3.1. Assess personal knowledge and skills against ***competency standards*** to determine development needs, priorities and plans 3.2. Seek feedback from employees, ***clients and colleagues*** and use this feedback to identify and develop ways to improve competence 3.3. Identify, evaluate, select and use ***development opportunities*** suitable to personal learning style/s to develop competence 3.4. Undertake participation in networks to enhance personal knowledge, skills and work relationships 3.5. Identify and develop new skills to achieve and maintain a competitive edge

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to receive, analyse and report on feedback
- literacy skills to interpret written and verbal information about workplace requirements
- organisational skills to set and achieve priorities.

Required knowledge

- principles and techniques involved in the management and organisation of:
  - performance measurement
  - personal behaviour, self-awareness and personality traits identification
  - personal development plan
  - personal goal setting
  - time management
- management development opportunities and options for self
- organisation's policies, plans and procedures
- types of learning style/s and how they relate to the individual
- types of work methods and practices that can improve personal performance.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • systems and processes (electronic or paper-based) used to organise and prioritise tasks, which show how work is managed • personal development plan, with career objectives and an action plan
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to asses knowledge of work methods and practices that can improve personal performance • review of personal work goals, plans and activities • evaluation of work-life balance • review of documentation assessing personal knowledge and skills against competency standards.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Own responsibilities and accountabilities may include:	• expectations of workplace performance as expressed in a performance plan • outputs as expressed in position descriptions or duty statements • statement of conduct outlining an individual's responsibilities/actions/performance
Technology may include:	• computerised systems and software, databases, project management and word processing • electronic diary • personal digital assistant (PDA)
Competency standards may include:	• enterprise-specific units of competency consistent with work requirements • nationally endorsed units of competency consistent with work requirements
Clients and colleagues may be:	• colleagues at the same level and more senior managers • internal or external customers • people from a wide range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities • team members
Development opportunities may include:	• action learning • coaching • exchange/rotation • induction • mentoring • shadowing • structured training programs

Unit Sector(s)

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Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBWOR502B Ensure team effectiveness

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to facilitate all aspects of teamwork within the organisation. It involves taking a leadership role in the development of team plans, leading and facilitating teamwork and actively engaging with the management of the organisation. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to managers and addresses the need for managers to facilitate work teams and to build a positive culture within work teams. The unit takes a systematic and planned approach to developing teams. It includes the soft skills as well as more structured approaches to the management of teams. At this level, work will normally be carried out within complex and diverse methods and procedures which require the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish team performance plan	1.1. ***Consult*** team members to establish a common understanding of team purpose, roles, responsibilities and ***accountabilities*** in accordance with organisational goals, plans and objectives 1.2. Develop ***performance plans*** to establish expected ***outcomes***, ***outputs***, ***key performance indicators*** and goals for work team 1.3. ***Support*** team members in meeting expected performance outcomes
2. Develop and facilitate team cohesion	2.1. Develop ***strategies*** to ensure team members have input into planning, decision making and operational aspects of work team 2.2. Develop ***policies and procedures*** to ensure team members take responsibility for own work and assist others to undertake required roles and responsibilities 2.3. Provide feedback to team members to encourage, value and reward individual and team efforts and contributions 2.4. Develop ***processes*** to ensure that issues, concerns and problems identified by team members are recognised and addressed
3. Facilitate teamwork	3.1. Encourage team members and individuals to participate in and to take responsibility for team activities, including communication processes 3.2. Support the team in identifying and resolving work performance problems 3.3. Ensure own contribution to work team serves as a role model for others and enhances the organisation's image for all ***stakeholders***
4. Liaise with stakeholders	4.1. Establish and maintain open communication processes with all stakeholders 4.2. Communicate information from ***line manager/management*** to the team 4.3. Communicate unresolved issues, concerns and problems raised by team members and follow-up with line manager/management and other relevant stakeholders 4.4. Evaluate and take necessary corrective action regarding unresolved issues, concerns and problems raised by internal or external stakeholders

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to explain team goals, to address team conflict and to build an environment of trust • planning and organisational skills to keep team on track and focussed on work outcomes.
Required knowledge
• group behaviour • strategies for mentoring and coaching to informally guide and instruct team members • issue resolution • strategies for gaining consensus.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • range of techniques that can be used to build work teams, strengthen communications in the team and resolve issues • methods for engaging with stakeholders and obtaining advice from outside the work team, to ensure team is focussed and on track • knowledge of group behaviour.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports • demonstration of team building techniques • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of performance in role plays • review of performance plans developed for work team • review of policies and procedures developed to ensure team members take responsibility for own work.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Consultation may refer to:	• conducting meetings, interviews, brainstorming sessions, email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual performance plans • mechanisms used to provide feedback to the work team in relation to outcomes of consultation
Accountabilities may refer to:	• responsibilities as defined in position descriptions, codes of conduct/behaviour, duty statements or similar • statement of conduct outlining responsibilities/actions/performance
Performance plans may refer to:	• individual performance plans linked to team goals • team plans based on work assignments and responsibilities
Outcomes, ***outputs***, ***key performance indicators*** may refer to agreed:	• changes in work roles and responsibilities • improved individual and team, performance and participation • improvements to systems, operations • measures for monitoring and evaluating the efficiency or effectiveness of systems or services • quality standards and expectations • targets for productivity improvements such as reduced downtime, higher production levels, decreases in absenteeism • targets for training and development
Support may include:	• Coaching • Mentoring • Training and development opportunities • Clarification of roles and expectations

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RANGE STATEMENT	
	• Long term or short term plans • Meetings
Strategies may refer to:	• clarification of roles and expectations • electronic communication devices and processes, such as intranet and email communication systems, to facilitate input • long-term or short-term plans factoring in opportunities for team input • mentoring and 'buddy' systems to support team members in providing input • newsletters and briefings • training and development activities
Policies and procedures may refer to:	• organisational guidelines and systems that govern operational functions • procedures that detail the activities that must be carried out for the completion of actions and tasks • Standard Operating Procedures
Processes may refer to:	• brainstorming options with the team for addressing concerns • creating a matrix of issues and concerns and distributing for comment • discussions with individuals regarding their concerns • distributing drafts for comment with a range of options for resolution of concerns • training and development sessions
Stakeholders may include:	• Board members • business or government contacts • funding bodies • union/employee groups and representatives • work team
Line manager/management may refer to:	• chief executive officer • direct superior • other management representatives

Unit Sector(s)

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Unit sector	

Competency field

Competency field	Industry Capability - Workplace Effectiveness

Co-requisite units

Co-requisite units		

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BSBWRK509A Manage industrial relations

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage industrial relations matters within an organisation, with day to day involvement. It includes strategic planning and policy development for industrial relations as well as negotiation, conflict management and dispute resolution. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals with a well established, sound theoretical knowledge base in human resources management and industrial relations who are proficient in using a range of specialised technical and managerial techniques to plan, carry out and evaluate their own work and/or the work of a team. They may or may not have responsibility for supervising the work of others but are authorised to oversee industrial relations in the organisation. However they will have knowledge of current industrial relations trends and legislation. The unit addresses staff who have responsibility for working across the organisation to ensure that there is a policy infrastructure which ensures legislative compliance and clarifies issues. It also addresses the requirement for responding to industrial conflict and grievances.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop industrial relations strategies/policies	1.1. Analyse strategic plans and operational plans to determine ***long-term industrial relations objectives*** 1.2. Analyse existing industrial relations performance in relation to strategic industrial relations objectives 1.3. Evaluate options in terms of ***cost benefit***, ***risk analysis*** and current legislative requirements 1.4. Establish industrial relations strategies/policies within the management team 1.5. Identify the knowledge and skills needed by management and the workforce to effectively implement these strategies/policies
2. Implement industrial relations strategies/policies and plans	2.1. Develop an ***implementation plan*** and contingency plan for the industrial relations strategies/policies 2.2. Make arrangements for training and development in accordance with identified needs, to support the industrial relations plan 2.3. Undertake ***associated industrial relations activities*** to agree to changes required by policies or implementation plan 2.4. Ensure procedures for addressing grievances and conflict are properly documented 2.5. Communicate key issues about procedures for addressing grievances and conflict
3. Manage negotiations, conflict and disputes	3.1. Train individuals in ***conflict management techniques/procedures*** 3.2. Identify and where possible alleviate or eliminate, sources of conflict or grievance in accordance with legal requirements 3.3. Check documentation and other information sources to clarify issues in dispute 3.4. Obtain expert or specialist advice and/or refer to precedents, if required 3.5. Determine desired negotiation outcomes, negotiation strategy and negotiation timeframes 3.6. Advocate the organisation's position in negotiation to obtain agreement 3.7. Document and if necessary, ***certify*** the agreed outcomes with the relevant jurisdiction 3.8. Implement agreements 3.9. Take remedial action where groups or individuals

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ELEMENT	PERFORMANCE CRITERIA
	fail to abide by agreements

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to advocate, consult, negotiate and mediate conflict • innovation and problem-solving skills to manage sensitive and important issues • planning and time management skills to meet critical deadlines, to sequence tasks, to prepare submissions and to present cases.
Required knowledge
• enterprise and workplace bargaining processes • key entities in the Australian industrial relations system, including courts and tribunals, trade unions, employer bodies • relevant industrial, occupational health and safety, equal opportunity and anti-discrimination legislation in both the Commonwealth and state jurisdictions.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated understanding of contemporary industrial issues and legislation • documented strategies and procedures for dealing with grievances and disputes • performance of negotiation/conflict resolution techniques • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports on industrial issues • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of demonstrated techniques in negotiation and case presentation • observation of presentations • oral or written questioning to assess knowledge of industrial relations legislation • review of documentation outlining long-term industrial relations objectives • review of implementation plan and contingency plan • evaluation of documentation communicating key issues about procedures for addressing grievances and conflict.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

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EVIDENCE GUIDE	
	• other units from the Diploma of Human Resource Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Long-term industrial relations objectives may relate to:	• effective management of grievances, conflict situations and dispute resolution procedures • employee commitment • employee satisfaction • job design • negotiation outcomes • organisational culture • relations with unions or other peak bodies • restructuring • salary, remuneration, benefits or bonuses • workforce planning • workplace reform
Cost benefit means:	• calculation to determine whether the results/outcomes of a particular course of action are sufficient to justify the costs and risks in taking that action
Risk analysis means:	• determination of the likelihood of a negative event preventing the organisation meeting its objectives and the likely consequences of such an event on organisational performance
Implementation plan may include:	• documented objectives, methodology and timeframe • project plan
Associated industrial relations activities may include:	• clarification of terms and conditions of employment of those persons affected • consultation with employee representatives including unions and elected staff representatives • ensuring the legality of proposed strategies, policies and initiatives • referring to employer representatives for advice and support
Conflict management	• controlling difficult situations using legal remedies

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RANGE STATEMENT	
techniques/***procedures*** may include:	• dispute resolution procedures • negotiating/bargaining
Certify refers to:	• Australian Workplace Agreements • workplace collective agreements

Unit Sector(s)

Unit sector	

Competency field

Competency field	Workforce Development - Workplace Relations

Co-requisite units

Co-requisite units		

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CPCCCM2007B Use explosive power tools

Modification History

Minor changes made to range statement, including addition of photovoltaic (solar) panels
Equivalent to CPCCCM2007A

Unit Descriptor

This unit of competency specifies the outcomes required to apply safe and effective operation of explosive power tools (EPT), used to fasten materials or fix fasteners to bases. It includes both direct action and indirect action explosive powered fastening tools.

Application of the Unit

This unit of competency supports achievement of skills to safely and effectively use a range of EPT used in the construction industry.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation***.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
		1.5	Material quantity requirements are calculated in accordance with plans and specifications.
		1.6	***Materials*** appropriate to work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2	Set out fasteners.	2.1	***Minimum distances for set out*** from edge of substrate material are adhered to in accordance with legislation, regulations and codes of practice.
		2.2	Material is located and temporarily held or fixed into designed position according to detailed drawings.
3	Use EPT.	3.1	EPT is checked for operation according to manufacturer specifications and safety (OHS) requirements for ***use of EPT***.
		3.2	Fastener is selected according to requirements of job.
		3.3	Charge is selected to assessed requirements for material, base and penetration.

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		3.4	***Attachments*** and accessories are installed to EPT in accordance with manufacturer specifications and safety (OHS) requirements.
		3.5	***Fastener and charge*** in EPT are located to manufacturer specifications.
		3.6	EPT operation is carried out and fastener is fixed into place in accordance with manufacturer recommendations, legislation, regulations and codes of practice.
		3.7	Fastening penetration is checked and appropriate depth into material is applied.
		3.8	Power regulating device is adjusted for conditions.
		3.9	Misfire procedures are carried out according to manufacturer recommendations, legislation, regulations and codes of practice.
		3.10	Temporary holding and fixings are removed without damage to material.
4	Secure and store equipment and charges.	4.1	Charges are stored in designated container in accordance with legislation, regulations and codes of practice and used charges are recorded.
		4.2	Unused fasteners, the EPT and attachments are stored in a carry case in line with manufacturer recommendations.
		4.3	Logbook is checked and maintenance recorded according to manufacturer recommendations.
5	Maintain EPT and kit.	5.1	Safety features of tools are checked for serviceability in accordance with manufacturer operating manual.
		5.2	Tools are cleaned and lubricated to manufacturer recommendations.
		5.3	Periodic maintenance service is carried out to manufacturer specifications.
		5.4	Diminished stocks of charges and fasteners are replenished to designed effectiveness of EPT kit.

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6	Clean up.	6.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		6.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
- documentation from a variety of sources
- drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record maintenance in logbook
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- EPT materials
- EPT charges and fasteners
- equipment safety manuals and instructions
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management

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- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- security and storage procedures for equipment and charges
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures, including quality requirements
	• safely and effectively use tools and equipment
	• communicate and work effectively and safely with others
	• fix metal or timber to a steel, concrete or masonry base on one project of each to job specifications, including:
	  • completion of stripping and assembly of the tool
	  • completing log of serviceability
	  • maintaining and cleaning

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- selecting charges and fasteners applicable to base material and material being fixed
- misfire procedures
- using attachments
- complying with storage and security regulations and OHS requirements for the working environment
- selecting signage
- test fire.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to

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confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches

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- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to using EPT
- relevant Australian standards
- safe work procedures related to using EPT
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Planning and preparation include:

- work site inspection
- equipment defect identification
- assessment of conditions and hazards
- determination of work requirements.

Safety (OHS) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - photovoltaic (solar) panels
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public

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- working at heights
  - working in confined spaces
  - working in proximity to others
  - working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment may include:

- direct action EPT
- indirect action EPT
- clamps and levels.

Materials include:

- timber
- metals
- patented fasteners.

Environmental requirements include:

- clean-up management
- noise and dust
- vibration
- waste management.

Statutory and regulatory authorities include:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Minimum distance for set out of fasteners is to be in accordance with:

- regulated minimum distances
- bases, including concrete, masonry or steel.

Use of EPT includes:

- stripping and assembling tools
- completing log of serviceability
- maintaining and cleaning tools
- selecting charges and fasteners applicable to the base material and material being fixed
- misfire procedures
- using attachments
- complying with storage and security regulations

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	and OHS requirements for the working environment • selecting signage • test fire.
Attachments include:	• channel, rebate and other manufacturer attachments.
Fastener and charge include:	• firing a test shot with misfire procedures, complying with the regulated safety procedure for misfire.

Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCLDG3001A Licence to perform dogging

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to perform slinging techniques, including the selection and inspection of lifting gear and/or the directing of the crane operator in the movement of the load when the load is out of view of the crane/ operator for licensing purposes.

Application of the Unit

Application of the unit

This unit covers the scope of work to demonstrate competency in the application of slinging techniques, selection and inspection of lifting gear and/or the directing of the crane/ operator in the movement of the load.

This unit is based upon the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan job.	1.1. ***Site information*** is obtained and related to the task. 1.2. ***Hazard*** s and potential hazards associated with the slinging and directing of loads are identified. 1.3. ***Hazard control measures*** consistent with ***appropriate standards*** are identified to ensure the safety of personnel and equipment. 1.4. The weight, dimensions and centre of gravity of the load are identified and assessed. 1.5. Suitable lifting/slinging points on the load are identified. 1.6. Appropriate ***lifting equipment*** needs are assessed. 1.7. Appropriate ***communication methods*** are assessed with ***crane***/ operators and other ***appropriate personnel***. 1.8. Manufacturer's specifications/information is obtained for special loads where necessary.
2. Select and inspect equipment.	2.1. Lifting equipment appropriate to the task is selected. 2.2. Lifting equipment is inspected for serviceability. 2.3. Damaged or excessively worn lifting equipment is identified, labelled and rejected. 2.4. Appropriate communication methods for the crane/operator and appropriate personnel are selected. 2.5. Appropriate ***communication equipment*** is selected and its serviceability is checked. 2.6. Appropriate ***personal protective equipment*** (PPE) is selected and checked.
3. Prepare site and equipment.	3.1. Hazard prevention/control measures are applied consistent with appropriate standards to ensure the safety of personnel and equipment. 3.2. Appropriate slinging method is selected. 3.3. Lifting equipment is prepared and assembled where appropriate. 3.4. Load destination is prepared.
4. Perform task.	4.1. Lifting equipment is attached and secured to the lifting hook using appropriate techniques. 4.2. Lifting hook is positioned over the load centre of gravity. 4.3. Lifting equipment is attached and secured to the load

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ELEMENT	PERFORMANCE CRITERIA
	in an appropriate manner. 4.4. Tag line is attached and secured where appropriate. 4.5. Test lift is conducted to ensure security of load. 4.6. Load is moved maintaining stability and control at all times. 4.7. Appropriate communication methods and ***communication signals*** are applied to safely coordinate the load movement both within sight and out-of-sight of crane operator. 4.8. The load is landed to ensure that it is stable and secure from movement. 4.9. Lifting equipment is removed or disconnected from load and prepared for next task or storage.
5. Shut down job and clean up.	5.1. Unserviceable lifting equipment inspected and rejected. 5.2. ***Defective equipment*** is isolated and tagged. 5.3. Lifting equipment is stored in accordance with procedures and appropriate standards. 5.4. Hazard prevention/control measures are removed where appropriate. 5.5. Excess materials from the work area are removed (where applicable). 5.6. Defects are reported and recorded according to procedures and appropriate action is taken.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication techniques in the workplace including whistles, hand signals and use of fixed channel two-way radios
- communication skills at a level sufficient to communicate with other site personnel
- calculate rated capacity of lifting equipment
- apply different methods for making temporary connections to loads using fibre and synthetic ropes

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REQUIRED SKILLS AND KNOWLEDGE

- ability to interpret rated capacity and working load limit tags
- hazard identification and control
- slinging techniques
- selection and inspection of lifting equipment
- directing crane operators in the moving of loads in a safe manner, using a slewing crane
- inspection and care of a wide range of lifting equipment to appropriate Australian Standards and/or manufacturer's specifications.

Required knowledge

Required knowledge for this unit is:

- appropriate mathematical procedures for estimation and measurement of loads
- basic knowledge of types of cranes and their functions
- Commonwealth, state or territory OHS legislation, standards and codes of practice relevant to the full range of techniques for undertaking dogging activities
- load stability and safety factors in line with manufacturer's specifications
- types of lifting equipment and slinging techniques for use, and their limitations and performance in a wide range of conditions (including but not limited to slings, beams, accessories, clamps, work-boxes, bins and pallets)
- understanding of the hierarchy of control.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work. State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment of this unit which have been endorsed by the national body responsible for OHS matters.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with Commonwealth, state or territory OHS legislation, standards relevant to safe dogging and crane operations. • communicate and work safely with others in the work area. • apply Hazard prevention and control measures consistent with appropriate standards. • apply to move loads in conjunction with cranes including, the reading of tags, slinging, loading, directing and landing loads with a slewing mobile crane with a telescopic boom and a winch, in and out of sight of the crane/ operator, moving four loads of varying shapes, sizes and weights. • use fibre and/or synthetic rope as tag lines, and connecting to loads using clove hitch, rolling hitch, bowline and single sheetbend. • conduct pre and post operational checks of the lifting equipment.
Context of and specific resources for assessment	• Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the national OHS endorsed Assessment Instrument • Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting

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EVIDENCE GUIDE

	• Assessors must ensure that the assessment in the workplace is organised through a workplace supervisor to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints
	• Assessment is to comply with the requirements of any relevant Standards or operating procedures for dogging activities
	• Applicants must have access to:
	  • personal protective equipment (PPE) for the purpose of the performance assessment.
	  • four different loads as prescribed in the endorsed assessment instrument
	  • lifting and associated equipment
	  • suitable slewing crane
	  • communication equipment (eg. fixed channel, two-way radios) as applicable.

Method of assessment	Assessment must be conducted using the national OHS endorsed Assessment Instrument. This Instrument provides instruction on the application of the assessment. Assessment may be in conjunction with the assessment of other units of competency. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Site informationmay include but not be limited to	• local conditions such as access and egress • work method statements.
Hazards may include but not limited to:	• ground stability (eg. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. power lines, service pipes, trees, buildings, etc) • insufficient lighting • traffic (e.g. pedestrians, vehicles, plant) • weather (e.g. wind, lightning, storms) • other specific hazards (e.g. trip hazards, heights, radio interference, etc).
Hazard prevention/control measures	The systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of controls, including: 1. elimination. 2. substitution. 3. isolation. 4. engineered control measures. 5. safe work practices. 6. personal protective equipment.
Appropriate standard s may include:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards.
Lifting Equipment may include but not limited to:	• fibre ropes • wire ropes • chain

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RANGE STATEMENT

	• wire and synthetic slings • shackles • eyebolts • beam clamps • plate clamps • spreader beams • lifting beams • pallet forks and cages • concrete kibbles • personnel boxes.
Communication Methods may include but are not limited to:	• written instructions • signage, • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol.
Cranes may include but not limited to:	• tower cranes (including self erecting) • portal boom cranes • vehicle loading cranes • slewing mobile cranes • non-slewing cranes • derrick cranes.
Appropriate personnel may include but are not limited to:	• supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations.
Communication Equipment may include but not limited to:	• fixed channel two-way radios • whistles • bells.
Personal protective equipment (PPE) may include but not limited to:	• hard hat • safety boots • gloves • high visibility clothing • reflective vest • relevant breathing, hearing, sight, skin and sun protection.
Load destination may include but not limited to:	• ground • loading platforms • suspended floors • vehicles.

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RANGE STATEMENT

Communication signals may include but not limited to:	• stop - hand • stop - whistle • hoist up - hand • hoist up - whistle • hoist down - hand • hoist down - whistle • luff boom down - hand • luff boom down - whistle • luff boom up - hand • luff boom up - whistle • telescope out - hand • telescope out - whistle • telescope in - hand • telescope in - whistle • slew left - hand • slew left - whistle • slew right - hand • slew right - whistle.
Defective Equipment may include but not limited to:	• excessive wear • damage • stretched • broken wires • cut/damaged fibres.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCLRG3001A Licence to perform rigging basic level

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to perform basic rigging work associated with movement of plant and equipment, steel erections, hoists (including mast climbing hoists), placement of pre-cast concrete, safety nets and static lines, perimeter safety screens and shutters; and cantilever crane loading platforms for licensing purposes.

Application of the Unit

Application of the unit

This unit requires the applicant to be able plan the work, select and inspect equipment, set up task, erect structures and plant and dismantle structures and plant.

This unit is based upon the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLDG3001A Licence to perform dogging* or holding a valid licence for dogging.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units

CPCCLDG3001A	Licence to perform dogging

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan job.	1.1. Task to be undertaken is assessed. 1.2. Potential workplace ***hazards*** are identified. 1.3. ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment. 1.4. Site information is obtained. 1.5. All ***forces and loads*** associated with erecting and dismantling ***structures*** and ***associated plant*** are considered in consultation with ***appropriate personnel***. 1.6. ***Rigging equipment*** and ***associated equipment*** are identified in consultation with appropriate personnel according to ***procedures*** and site information. 1.7. *Safety equipment* is identified. 1.8. Appropriate ***communication methods*** are identified with appropriate personnel.
2. Select and inspect equipment.	2.1. Rigging equipment and associated equipment are selected and inspected according to procedures and the appropriate standard. 2.2. Safety equipment is selected and inspected according to procedures. 2.3. All defective rigging equipment, associated equipment and safety equipment is isolated, reported and recorded according to procedures. 2.4. ***Communication equipment*** is selected and inspected for serviceability (where applicable.
3. Set up task.	3.1. Appropriate ***hazard prevention/control measures*** are applied to the work area according to procedures. 3.2. ***Ground suitability*** is inspected and checked (where appropriate). 3.3. Site information is reviewed, interpreted and communicated to appropriate personnel and ***appropriate personnel***. 3.4. All forces and loads associated with erecting and dismantling structures and associated plant are determined in consultation with appropriate personnel. 3.5. Safety equipment is fitted and worn correctly (where appropriate). 3.6. Rigging equipment and associated plant are

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ELEMENT	PERFORMANCE CRITERIA
	positioned for work application and stability according to procedures.
	3.7. Methods of applying ***temporary connections*** using fibre rope are applied according to procedures and the appropriate standard.
4. Erect structures and plant.	4.1. Structures and associated plant are erected according to procedures and site information.
	4.2. Stability of structures and associated plant is maintained during erection according to procedures.
	4.3. Work is conducted safely at heights including safe and effective use of safety equipment.
	4.4. Appropriate communication methods and communication equipment, are used to co-ordinate the tasks.
	4.5. Associated plant and rigging equipment is used according to procedures and the appropriate standard.
	4.6. Temporary guys, ties, propping and shoring, including ***flexible steel wire rope***, and tubing, are connected where required.
	4.7. Associated equipment is used in a safe and appropriate manner.
	4.8. The completed task is inspected according to the appropriate standard.
	4.9. Excess materials are removed from the work area (where applicable).
5. Dismantle structures and plant.	5.1. Structures and associated plant are dismantled according to procedures and the appropriate standard.
	5.2. Work is conducted safely at heights including safe and effective use of safety equipment.
	5.3. Stability of structures and associated plant is maintained during dismantling according to procedures.
	5.4. Rigging equipment, associated equipment, safety equipment and associated plant are inspected for damage and defects.
	5.5. All defective rigging equipment, associated equipment, associated plant and safety equipment are isolated reported and recorded according to procedures.
	5.6. Rigging equipment and associated equipment are

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ELEMENT	PERFORMANCE CRITERIA
	stored. according to procedures and the appropriate standard.
	5.7. Hazard prevention/control measures are removed (where appropriate).

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to calculate Safe Working Load (SWL) and Working Load Limit (WLL)
- ability to erect and dismantle, level, plumb and stabilise associated plant and structures
- ability to work safely at heights including the correct application of safety equipment.
- accurate interpretation of basic structural charts and structural plans (site information)
- applying methods for making temporary connections of ropes using fibre and synthetic types
- apply methods of splicing and whipping fibre and synthetic ropes
- correct application and use of all rigging and associated equipment
- risk assessment and hazard control strategies
- interpersonal and communication skills at a level sufficient to site/workplace requirements. This includes the relevant communication methods and equipment.
- verify problems and equipment faults and demonstrate appropriate response.

Required knowledge

Required knowledge for this unit is:

- appropriate mathematical procedures for estimation and measurement of loads
- ability to interpret manufacturer's specifications for all plant and equipment use in rigging operations
- knowledge of principles relating to all plant, equipment and structural stability
- knowledge of the types and functions of rigging, safety and associated equipment including an understanding of their limitations.
- organisational and workplace standards, requirements, policies and procedures for rigging

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REQUIRED SKILLS AND KNOWLEDGE

- understanding of the hierarchy of hazard identification and control
- relevant Commonwealth, state or territory and local government OHS legislation, standards and codes of practice for undertaking rigging activities
- understanding of inspection and maintenance requirements of a wide range of appropriate plant and equipment in line with Australian Standards or manufacturer's specifications
- estimation of ground bearing pressures of the full range of soil types and associated ground conditions for setting up plant and equipment.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work.

State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment endorsed by the national body responsible for OHS matters for the assessment of this unit.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS licensing legislation.
- effectively communicate and work safely with others in the work area.
- effectively conduct risk assessment and management procedures.
- effectively complete the following tasks:-
  - inspection of all plant and equipment, and
  - installation of a fall arrest system (Static line), and
  - use of a safety harness / fall arrest system, and
  - installation of crane loading platforms and
  - installation of a safety net, and
  - installation of a shutter and safety screen, and
  - demonstrated ability to work safely at heights, and
  - erection of structural steel, and
  - erection of precast panel, and
  - set up and operation of a winch for load movement, and
  - installation of a materials hoist, or
  - installation of a mast climber.
- effectively demonstrate the following knots,

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EVIDENCE GUIDE

bends and hitches:-

- Sheet bend,
- Becket hitch,
- Running bowline,
- Double bowline.

- effectively demonstrate the following splices and whippings:-
  - Eye splice,
  - Back splice,
  - Short splice,
  - Sail makers whipping,
  - Common whipping,
  - West countryman's

Context of and specific resources for assessment

Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the National OHS endorsed Assessment Instrument.

Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting.

Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace.

Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with the requirements of any relevant Standards or operating procedures for basic rigging.

Applicants must have access to:

- personal protective equipment (PPE) for the purpose of the Performance Assessment.
- appropriate safety equipment in safe condition
- appropriate rigging equipment, associated equipment associated plant in safe condition as described in the endorsed assessment instrument
- communication equipment (e.g. two-way

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EVIDENCE GUIDE

	radios) where applicable • appropriate materials as required for safe erection of structures • appropriate materials for conducting fibre rope slicing, whipping, knots, bends and hitches.
Method of assessment	Assessment must be conducted using the national OHS endorsed Assessment Instruments. These Instruments provide advice on their application. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment may be in conjunction with the assessment of other units of competency. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but are not limited to:	• ground stability (e.g. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. power lines, service pipes) (**NB**: minimum clearance distance from powerlines or electrical equipment as determined by relevant state authority or

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RANGE STATEMENT

	electrical supply authority.) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms) • other specific hazards (e.g. dangerous materials).
Hazard control measures:	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: • elimination • substitution • isolation • engineering control measures • using safe work practices • personal protective equipment.
Appropriate standards may include:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards (where applicable).
Site Information may include, but not limited to:	• local conditions such as access and egress, • work method statements, • site specific job safety analyses and other site specific documentation as required. • task plans / Schedules and structural plans.
Forces and Loads may include, but not limited to:	• dead loads • live loads • static load • dynamic loads • wind loads.
Structures may include but are not limited to:	• structural steel • precast panels.
Associated plant may include but not limited to:	• static lines • safety nets • hoists

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RANGE STATEMENT

	• mast climbers • loading platforms.
Appropriate personnel may include:	• engineers • supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations.

Rigging Equipment may include but is not limited to:	• scaffolds
	• elevated work platforms
	• personnel box
	• cantilevered crane loading platforms
	• mast climbers.
	• safety screens and shutters
	• cranes including but not limited to:
	  • non-slewing cranes
	  • mobile slewing cranes
	  • vehicle loading cranes
	  • tower cranes
	  • self-erecting tower cranes
	  • portal boom cranes
	  • derrick cranes
	  • bridge and gantry cranes.

Associated equipment may include but is not limited to:	• all types of power and manually operated lifting gear • fibre ropes • flexible steel wire rope (FSWR) • chains • wire and synthetic slings • shackles • terminations • wedge sockets • eye bolts • beam clamps • plate clamps • rope grips • turnbuckles • rigging screws • chain blocks • lever blocks • lever-action winches

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RANGE STATEMENT

	• sheaves • spreader bars • lifting beams • jacks • levers • skates • wedges • rollers • girder trolley
Procedures may include but is not limited to:	• manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures, relevant codes of practice • workplace procedures (work instructions, operating procedures, checklists).
Safety Equipment may include but not limited to:	• safety harness • energy absorber • lanyard • inertia reel • static safety lines • safety nets.
Communication Methods may include but is not limited to:	• verbal and non-verbal language • written instructions • signage • hand signals • listening, • questioning to confirm understanding, and appropriate worksite protocol. **NB**: Mobile phones are not to be used for signalling purposes during the rigging process.
Communication equipment may include but is not limited to:	• fixed channel two-way radios
Hazard prevention/control measures may include but is not limited to:	• safety tags on electrical switches/isolators • powerlines are insulated • safety observer used inside exclusion zone • power disconnected • traffic barricades and control • pedestrian barricades • trench covers

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RANGE STATEMENT

	• movement of obstructions • personal protective equipment • adequate illumination • safety shutters and screens.
Ground suitability may include but is not limited to:	• rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete • suspended concrete floors • building roofs • landings • ground bearing pressure.
Appropriate personnel may include but not limited to	• other riggers • doggers • crane operators.
Temporary connections may include but not limited to:	• knots • bends • hitches • spicing • whipping.
Flexible Steel Wire Rope (***FSWR***) includes:	• identification, uses and connections. May include termination for: • static lines, • guys, • purchase systems, • lashing, • cranes, • hoist and winch ropes.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCLSF2001A Licence to erect, alter and dismantle scaffolding basic level

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to erect, alter and dismantle scaffolding at the basic level, consisting of scaffolding work connected with the operation or use of modular or pre-fabricated scaffolds, cantilevered materials hoists with a maximum working load of 500kg, ropes and gin wheels, safety nets and static lines, and bracket scaffolds (tank and formwork) for licensing purposes.

Application of the Unit

Application of the unit

This unit covers the scope of work to plan the job, select and inspect equipment, set up task, erect scaffold and scaffold equipment and dismantle scaffold and scaffold equipment.

This unit is based upon the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form it state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan job.	1.1. Task to be undertaken is assessed. 1.2. Potential workplace ***hazards*** are identified. 1.3. ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment. 1.4. Site information is obtained. 1.5. ***Scaffold***, ***associated equipment*** and ***scaffolding equipment*** are identified from site information and in consultation with ***appropriate personnel*** (where applicable). 1.6. ***Safety equipment*** is identified. 1.7. All ***forces and loads*** exerted on and by the scaffold and/or scaffolding equipment are determined and calculated. 1.8. Appropriate ***communication methods*** are identified with appropriate personnel.
2. Select and inspect plant and equipment.	2.1. Scaffold, associated equipment and scaffold equipment are selected and inspected according to ***procedures*** and site information. 2.2. Safety equipment is selected and inspected according to procedures. 2.3. All defective Scaffold, associated equipment, scaffold equipment and safety equipment are isolated according to procedures. 2.4. All defective Scaffold, associated equipment, scaffold equipment and safety equipment are reported and recorded according to procedures. 2.5. ***Communication equipment*** is selected and inspected for serviceability (where applicable).
3. Set up task	3.1. Appropriate ***hazard prevention***/***control measures*** are applied to the work area according to procedures. 3.2. Ground suitability is checked. 3.3. Appropriate footings are prepared to support scaffold and scaffold equipment according to procedures and the appropriate standard. 3.4. Scaffold and scaffold equipment are prepared for erection according to procedures and the appropriate standard. 3.5. Safety equipment is fitted and secured according to procedures (where applicable).

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ELEMENT	PERFORMANCE CRITERIA
	3.6. Scaffold and scaffold equipment are positioned for work application and ***stability*** according to procedures and the appropriate standard.
4. Erect scaffold and scaffold equipment.	4.1. Scaffold and scaffold equipment are erected according to procedures and the appropriate standard.
	4.2. Work is conducted safely at heights including safe and effective use of safety equipment.
	4.3. Scaffold and scaffold equipment are erected consistent with site information.
	4.4. Appropriate communication methods are used to coordinate the tasks.
	4.5. Completed tasks are inspected for compliance with the appropriate standard.
	4.6. Handover certificate is completed as required and handed to appropriate personnel.
	4.7. Excess materials from the work area are removed (where applicable).
5. Dismantle scaffold and scaffold equipment.	5.1. Scaffold and scaffold equipment are dismantled according to procedures and the appropriate standard.
	5.2. Work is conducted safely at heights including safe and effective use of safety equipment.
	5.3. Scaffold, associated equipment and scaffold equipment are inspected for damage and defects.
	5.4. All damaged and defective scaffold, associated equipment and scaffold equipment are tagged and isolated according to procedures.
	5.5. Hazard prevention/control measures are removed (where appropriate).
	5.6. All damaged and defective scaffold, associated equipment and scaffold equipment are reported and recorded according to procedures and appropriate action taken.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- ability to calculate Safe Working Load (SWL) and Working Load Limit (WLL)
- ability to erect scaffold within the scope of the basic scaffolder
- ability to erect, level, plumb and stabilise cantilever hoists and scaffolds
- ability to interpret manufacturer's specifications for plant and equipment
- ability to work safely at heights
- ability to set up fall arrest systems, including safety nets
- ability to work safely in confined spaces
- accurate interpretation of basic structural charts and structural plans
- applying methods for making temporary connection using fibre ropes
- correct application of all scaffolding equipment
- methods for making temporary connection of guy ropes and static lines using Flexible Steel Wire Rope (FSWR)
- verify problems and equipment faults and demonstrate appropriate response.

Required knowledge

Required knowledge for this unit is:

- use of appropriate mathematical procedures for estimation and measurement of loads Commonwealth, state or territory OHS legislation and local government regulations, including standards and codes of practice relevant to the full range of techniques for undertaking basic scaffolding activities
- knowledge of principles relating to plant and equipment stability
- knowledge of types of scaffolding and their application
- knowledge of scaffolding erection and dismantling techniques
- knowledge of types of hoists, plant and equipment associated with basic scaffolding and their use/s
- risk assessment and control, including understanding of the hierarchy of control
- estimation of bearing pressures of the full range of soil types and associated ground conditions for setting up plant and equipment
- load capabilities of different types of scaffolding constructions
- understanding and application of organisational and workplace standards, requirements, policies and procedures for scaffolding
- safety equipment applicable to scaffolding
- understanding and application of the inspection and maintenance requirements for basic scaffold, associated equipment and scaffold equipment
- uses and limitations of tools and equipment, appropriate to scaffolding tasks and activities.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work.

State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment endorsed by the national body responsible for OHS matters for the assessment of this unit.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS licensing requirements.
- effectively communicate and work safely with others in the work area.
- effectively apply risk assessment and hazard management procedures at a basic scaffolder level.
- effectively complete the planning, erection and dismantling of a scaffolding system, in accordance with procedures, including a minimum of erect and dismantle:
  - Modular Scaffold with return and ladder access and platform brackets (hop-up brackets)
  - Bracket Scaffold
  - Mobile Scaffold
  - gin wheel
  - Cantilever Hoist
  - safety net and static line
  - safety screen

Scaffold to be of a minimum height of at least 5.0 metres above the supporting surface with full edge protection (includes safety screen) for each work platform including toe boards and handrails.

- correctly demonstrate fibre rope bends and hitches.

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EVIDENCE GUIDE

	• effectively conduct pre and post operational checks of basic scaffolding. • complete handover certificate as required.

Context of and specific resources for assessment	• Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the National OHS endorsed Assessment Instrument
	• Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting
	• .Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints for basic scaffolding
	• Applicants must have access to:
	  • personal protective equipment (PPE) for the purpose of the Performance Assessment
	  • appropriate safety equipment in safe condition
	  • appropriate scaffolding and associated scaffolding equipment
	  • communication equipment (e.g. fixed channel two way radios) where applicable
	  • appropriate personnel to assist with the erecting and dismantling of scaffold and scaffold equipment.

Method of assessment	Assessment must be conducted using the national OHS endorsed Assessment Instruments. These Instruments provide advice on their application. Assessment may be in conjunction with the assessment of other units of competency. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

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	Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but not limited to:	• ground conditions (e.g. ground bearing pressure/s, back filled trenches, underground services, slopes) • overhead hazards (e.g. power lines, service pipes) (minimum clearance distance from powerlines or electrical equipment as determined by relevant state authority or electrical supply authority) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms) • other site specific hazards (e.g. hazardous materials).
Hazard control measures:	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: • elimination

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RANGE STATEMENT

	• substitution • isolation • engineering control measures • using safe work practices • personal protective equipment.
Appropriate standards may include:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards (where applicable).
Site Information may include, but not be limited to:	• local conditions such as access and egress • work method statements • site-specific job safety analyses and other documentation as required • task plans.

Scaffold may include but not limited to:	• mobile scaffolding
	• bracket scaffolding
	• modular scaffolding, including:
	  • steel
	  • fibreglass and
	  • aluminium frame scaffolding
	• prefabricated scaffolding.

Associated equipment may include but not limited to:	• planks
	• flexible steel wire rope and fittings.
	
	NB: including identification, uses and connections which may include termination for static lines and guys for cantilever hoists.
	
	• ladders
	• tie tubes and fittings
	• fibre rope
	
	NB: including identification and uses (natural and synthetic), and connections associated with bends and hitches.
	
	• stairways and screening
	• hand tools, including, but not limited to:
	  • box spanners
	  • hammers
	  • spirit levels
	  • tape measures

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RANGE STATEMENT

	• scaffold belts • podgers • hammers • wire nips • wrenches • torpedo levels • shovels • spanners • cutters • hammer drills • sledge hammers • wheel barrows and • relevant maintenance equipment.
Scaffolding equipment may include but not limited to:	• materials hoists • gin wheels • safety nets • static lines and fittings.
Appropriate personnel may include, but are not limited to:	• supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations • other scaffolders • other site personnel as applicable.
Safety equipment may include but not limited to:	• safety harness • energy absorber • lanyard • inertia reel.
Forces and Loads may include, but are not limited to:	• dead loads • live loads • static load • dynamic loads • wind loads.
Communication Methods may include but not limited to:	• verbal and non-verbal language • written instructions • signage • communication signals • listening • questioning to confirm understanding, and appropriate worksite protocol.

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RANGE STATEMENT

Procedures may include but not limited to:	• manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures, relevant codes of practice • workplace procedures (work instructions, operating procedures, checklists) • reporting and recording procedures such as e.g. equipment defect/s.
Communication equipment may include but is not limited to:	• fixed frequency two way radios • mobile phones.
Hazard prevention/control measures may include but not limited to:	• safety tags on electrical switches/isolators • safety observer used inside exclusion zone (e.g. Spotter), to include the use of power line warning systems (e.g. Tiger tails) • power disconnected by competent authority where applicable • traffic and pedestrian barricades and controls • safe and adequate access / egress is established • personal protective equipment • adequate illumination.
Ground suitability may include but not limited to:	• rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete.
Stability may include but is not limited to:	• ground bearing pressure • sole plates/boards • screw jacks • levelling • ties/guys.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSF2004A Place and fix reinforcement materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to place and fix reinforcement for concrete work as part of construction processes.

It includes planning and preparation for the work, final preparation for placement, placing and fixing reinforcement, checking the reinforcement and completing clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to place and fix reinforcement materials for a construction project, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, ***quality requirements*** and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Stock of ***reinforcement materials*** is checked for correct type, quality and quantities against reinforcement schedule and details in plans/specifications. 1.6. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Prepare for reinforcement placement.	2.1. Formwork is checked for completion and conformity to receive reinforcement. 2.2. Reinforcement bars are cut and bent to required set out and plans and specifications. 2.3. Bars are tied to designed configuration from plans and specifications. 2.4. Reinforcement sheets are cut to required sizes. 2.5. Stiffening rods are attached to panels as required to facilitate handling processes. 2.6. Bar chairs and spacers are located to requirements of reinforcement schedule and plans and specifications.
3. Place and fix reinforcement.	3.1. Fabric reinforcement sheets are placed into position in accordance with engineer's drawings and specifications. 3.2. Reinforcement bars are located and positioned in accordance with engineer's drawings and specifications. 3.3. Reinforcement is located and placed using bar chairs, ligatures and spacers according to engineer's drawings and specifications. 3.4. Reinforcement material is supported and secured

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ELEMENT	PERFORMANCE CRITERIA
	into position in accordance with engineer's drawings and specifications. 3.5. Cast-in items are secured to reinforcement in accordance with engineer's drawings and specifications. 3.6. Ends of protruding reinforcement material are covered and protected in accordance with plans and specifications.
4. Check reinforcement prior to concrete pour.	4.1. Location and position of reinforcement and fixing ties to reinforcement are checked for accuracy. 4.2. Depth of coverage, clearance, spacing and overlap of reinforcement material are checked in accordance with engineer's drawings and job specification.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
- documentation from a variety of sources
- drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools,

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REQUIRED SKILLS AND KNOWLEDGE

equipment or materials

- numeracy skills to apply calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction and steelfixing terminology
- job safety analysis (JSA) and safe work method statements
- job specifications related to the layout of reinforcement materials
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- reinforcement materials placement and fixing techniques
- types, properties, uses and limitations of reinforcement materials
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • place and fix reinforcement materials to specification on a minimum of three different jobs and involving deformed bars, rods and mesh sheets.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications
- workplace operations and procedures.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the placement and fixing of reinforcement materials

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures relating to the placement and fixing of reinforcement materials • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• steelfixing may involve reinforcing concrete for foundations, pits and slabs, columns, walls, stairs, plinths, kerbs, gutters, pathways and hard standings.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • cutting, grinding and welding equipment
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	  • working with metals under stress
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:

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RANGE STATEMENT

	• bolt cutters • measuring tapes and rules • mesh guillotines • reinforcement benders • tie wire reels • wire nippers • may include: • general hand and power tools • manual metal arc welding (MMAW) machines • oxy-acetylene setting and cutting attachments.
Reinforcement materials:	• include: • bar chairs • deformed bars • ligatures • mesh sheets of deformed bars • mesh sheets of plain bars • plain rods • spacer/spreader assemblies • wire ties • may include: • pipe sections • scaffolding components • structural steel sections.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

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Functional area

Functional area

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CPPSIS3015A Collect spatial data

Modification History

Unit revised and not equivalent to CPPSIS3005A Collect basic spatial data
New unit title
Element structure, performance criteria and critical aspects reviewed to reflect workplace requirements
Skills and knowledge requirements and the range statement updated

Unit Descriptor

This unit of competency specifies the outcomes required to collect spatial data through a range of methods. It requires the ability to work with others in performing set task requirements within deadlines. It also requires the ability to perform a range of basic activities in the use of information technology and equipment within a spatial information handling framework. Functions would be carried out under supervision, often in a team environment, and within organisational guidelines.

Application of the Unit

This unit of competency supports the application of teamwork, verbal and written workplace communication skills, and the use of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in the surveying and spatial information services (SSIS) industry sector in positions such as field coordination, data collection and administration.

Licensing/Regulatory Information

No licensing, legislative and regulatory requirements apply to this unit at the time of endorsement.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for the task.	1.1	Requirements for the task are clarified with ***appropriate persons.***
		1.2	Equipment, supplies and ***SIS technologies*** are selected according to task requirements.
		1.3	Equipment is checked to ensure it is in safe working order.
2	Gather basic data.	2.1	Data and ***attributes*** are collected using methodologies detailed in a ***data collection plan***.
		2.2	***Metadata*** is documented according to accepted industry standards.
		2.3	Discrepancies between specifications and actual activities are identified, recorded and reported.
		2.4	***Administrative and legal requirements*** for data collection are complied with and recorded.
		2.5	Assistance is given to ***relevant personnel*** assisting in the data collection process.
		2.6	***OHS requirements*** are planned for and adhered to.
3	Use equipment.	3.1	Supervisor guidance is sought on the selection of appropriate equipment.
		3.2	Appropriate equipment is operated according to the task requirements and ***manufacturer specifications***.

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		3.3	Safety requirements are adhered to at all times.
		3.4	Data is recorded correctly and according to specifications.
4	Maintain equipment.	4.1	Supervisor guidance is sought on the manner in which equipment is to be maintained.
		4.2	***Operational maintenance*** of equipment is undertaken according to organisational guidelines.
		4.3	***Contingencies*** that may affect equipment usage are reported.
		4.4	Unsafe or faulty equipment is reported and referred for repair.
		4.5	Tools and equipment are stored safely in appropriate locations and according to manufacturer specifications.
5	Contribute to finalising the collection process.	5.1	***Required documentation*** is completed according to organisational requirements.
		5.2	All data and documentation are stored according to ***organisational guidelines***.

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Required Skills and Knowledge

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills

- communication skills to:
  - discuss vocational issues effectively with colleagues
  - impart knowledge and ideas through oral, written and visual means
- computer skills to develop business documentation
- literacy skills to:
  - assess and use workplace information
  - read and record data
  - read and interpret datums and projections
- numeracy skills to:
  - accurately record and collate
  - undertake basic computations
- organisational skills to prioritise daily activities
- spatial skills to:
  - perform basic spatial and aspatial data collection in an accurate manner
  - use spatial information technology to perform basic data collection
- work effectively as part of a team
- use a range of equipment in the field safely, accurately and as required for the task

Required knowledge

- characteristics, capabilities and limitations of tools, technology and equipment used
- data collection methods and equipment suitable to spatial data, including electronic
- organisational policies and guidelines relating to data storage and retrieval practices
- OHS guidelines relating to operating computers
- processes for recording metadata
- spatial and aspatial data acquisition methods, including using electronic equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment	This unit of competency could be assessed on its own or in combination with other units relevant to the job function.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of: • selecting, using and maintaining equipment for spatial data collection • gathering spatial data • knowledge of metadata recording processes.
Specific resources for assessment	Resource implications for assessment include access to: • assessment instruments, including personal planner and assessment record book • assignment instructions, work plans and schedules, policy documents and duty statements • registered training provider of assessment services • relevant guidelines, regulations and codes of practice • suitable venue and equipment. Access must be provided to appropriate learning and assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.
Context of assessment	Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.
Method of assessment	Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment). Demonstrated competency in a range of situations, that may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace. Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation in realistic simulated environments may be substituted.

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Guidance information for assessment

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of surveying and spatial information services requirements to assess competency.

Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical).

Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff.

All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory.

Where assessment is for the purpose of recognition (recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.

Assessment processes will be appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Appropriate persons may

- assessors

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include:

- colleagues
- managers
- supervisors
- trainers.

SIS technologies may include:

- data recording equipment
- digital imagery
- handheld global navigation satellite system (GNSS)
- maps (digital or hard copy)
- measuring instruments
- non-navigational aids relevant to duties, including:
  - compass
  - clinometer
  - distance measuring wheel
  - personal digital assistant
  - personal computer-based digitising boards
  - tools
  - ultra high frequency (UHF) radio.

Attributes are properties associated with a dataset and may include:

- condition
- date
- size
- type.

Data collection plan may include:

- data logging
- digitising theodolite
- GNSS scanning
- photogrammetry
- remote sensing
- sonar
- survey
- total station.

Metadata is summarised information about a spatial dataset that describes the characteristics of the dataset, including:

- availability
- conditions of use
- coordinate system
- currency
- date of acquisition
- quality
- source
- spatial data acquisition methodologies
- version control.

Administrative and legal requirements may include:

- Australian standards, quality assurance and certification requirements
- award and enterprise agreements

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- company OHS guidelines
- licensing arrangements
- relevant codes of practice
- relevant state, territory or federal legislation that affects organisational operations, including:
  - anti-discrimination and diversity
  - industrial relations.

Relevant personnel may include:

- colleagues
- registered surveyors
- site personnel
- staff or employee representatives
- supervisors or line managers
- suppliers
- users.

OHS requirements may include:

- Australian standards
- development of site safety plan
- identification of potential hazards
- inspection of work sites
- training staff in OHS requirements
- use of personal protective equipment and clothing.

Manufacturer specifications may be found in:

- electronic format
- equipment specifications
- operator manuals
- printed product instructions and information
- spatial database
- warranty documents.

Operational maintenance tasks may include:

- adjusting
- cleaning
- lubricating
- tightening
- maintaining battery
- simple repairs.

Contingencies may include:

- adverse weather
- equipment failure.

Required documentation may include:

- accident and injury reports
- authority/approval documentation
- meeting reports
- records and reports of communication
- reimbursements.

Organisational guidelines may include:

- code of ethics
- company policy

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- legislation relevant to the work or service function
- manuals
- OHS policies and procedures
- personnel practices and guidelines outlining work roles and responsibilities.

Unit Sector(s)

Surveying and spatial information services

Custom Content Section

Not applicable.

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CPPSIS3016A Provide field support services

Modification History

Unit revised and not equivalent to CPPSIS3006A Provide field support services
Element structure, performance criteria, and critical aspects reviewed to reflect workplace requirements
References to sustainability strengthened
Skills and knowledge requirements and the range statement updated

Unit Descriptor

This unit of competency specifies the outcomes required to provide field support services. It requires the ability to work with others on site to perform key organisational requirements within a surveying and spatial information services (SSIS) framework, working from site drawings and specifications. Functions would be carried out under supervision, often in a team environment, and within organisational guidelines.

Application of the Unit

This unit of competency supports the application of communication, interpersonal and teamwork skills, and the use of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in the SSIS industry sector in positions such as field coordination and data collection.

Licensing/Regulatory Information

No licensing, legislative and regulatory requirements apply to this unit at the time of endorsement.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare for support task.	1.1	Requirements of the job are clarified with ***relevant personnel*** according to ***organisational guidelines***.
		1.2	Tools, ***equipment and supplies*** appropriate to the environment are selected and prepared according to ***specifications***.
		1.3	Safety requirements for the protection of site personnel and the public are determined with regard to the field support services and their effect on the environment.
		1.4	Plans are examined to determine the location of services.
		1.5	***Personal protective equipment*** is used according to ***OHS*** guidelines.
2	Execute support tasks.	2.1	Barricades, protective works and signs are erected, when required according to organisational guidelines.
		2.2	Surface positions are determined and marked according to ***accepted standards*** using information available from site drawings and references, and relevant personnel.
		2.3	***Support tasks*** are carried out under direction and according to specifications.
3	Finalise the task.	3.1	Site is restored as near as practicable to original condition and any waste generated is disposed of in an ***environmentally friendly manner***.
		3.2	Tools and equipment are cleaned and stored in a secure

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location.

3.3 Repair work is organised for unsafe or faulty tools and equipment.

3.4 Required ***spatial business documentation*** is completed accurately and promptly according to organisational guidelines.

Required Skills and Knowledge

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills

- ability to select and use required tools appropriately
- communication skills to:
  - discuss vocational issues effectively with colleagues
  - impart knowledge and ideas through oral, written and visual means
  - interpersonal skills e.g. cooperation and flexibility
- literacy skills to:
  - assess and use workplace information
  - read and record data
- numeracy skills to:
  - accurately record and collate
  - undertake basic computations
- organisational skills to prioritise daily activities
- spatial skills to apply understanding of height, depth, breadth, dimension and position to actual operational activity and virtual representation

Required knowledge

- industry ethics and practices relating to field activity
- OHS requirements relating to field activity
- spatial data measuring and recording
- work allocation procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment

This unit of competency could be assessed on its own or in combination with other units relevant to the job function, for example CPPSIS3017A Select, operate and maintain equipment and supplies, and CPPSIS3018A Transfer personnel and loads.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- selecting equipment
- demonstrating critical aspects of working safely
- providing support in determining and marking positions
- knowledge of the required spatial tools and equipment.

Specific resources for assessment

Resource implications for assessment include access to:

- assessment instruments, including personal planner and assessment record book
- assignment instructions, work plans and schedules, policy documents and duty statements
- registered training provider of assessment services
- relevant guidelines, regulations and codes of practice
- suitable venue and equipment.

Access must be provided to appropriate learning and assessment support when required.

Where applicable, physical resources should include equipment modified for people with disabilities.

Context of assessment

Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.

Method of assessment

Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment).

Demonstrated competency in a range of situations, that may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace.

Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation in realistic simulated environments may be substituted.

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Guidance information for assessment

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of surveying and spatial information services requirements to assess competency.

Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical).

Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff.

All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory.

Where assessment is for the purpose of recognition (recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.

Assessment processes will be appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Relevant personnel may include:

- colleagues
- staff or employee representatives
- supervisors or line managers

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	• suppliers • users.
Organisational guidelines may include:	• code of ethics • company guidelines • legislation relevant to the work or service function • manuals • OHS policies and procedures • personnel practices and guidelines outlining work roles and responsibilities.
Equipment and supplies may include:	• data recording equipment • measuring instruments • personal computer-based digitising boards • tools • vehicles.
Specifications may include:	• budget • data capture methods • personnel required • project deliverables • resources needed • timelines.
Personal protective equipment may include:	• breathing apparatus • gloves • helmets • overalls • masks and respirators • safety boots • safety glasses • safety vests • sun protection equipment.
OHS may include:	• Australian standards • development of site safety plan • identification of potential hazards • inspection of work sites • training staff in OHS requirements • use of equipment and signage.
Accepted standards may include:	• Environment Protection Authority (EPA) recommendations • state, territory and federal legislative requirements • manufacturer instructions and specifications • OHS standards • organisational guidelines • relevant industry codes of practice.

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Support tasks may include:	• equipment maintenance • identifying, determining and marking positions • obtaining supplies • recording data • driving.
Environmentally friendly manner may include**:**	• placing hazardous material such as chemical-based products, paint cans and used oil into a designated bin and taking it to an appropriate disposal centre • placing recyclable rubbish such as plastic, paper, cans, cardboard, glass and plastic bottles into a designated bin • separating degradable and non-degradable waste.
Spatial business documentation may include:	• databases • detailed technical description of the spatial data and its qualifiers • emails and faxes • quotations and estimates • standard letters • tax invoices • statements.

Unit Sector(s)

Surveying and spatial information services

Custom Content Section

Not applicable.

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CPPSIS5032A Capture new spatial data

Modification History

Unit revised and not equivalent to CPPSIS5002A Capture new spatial data
Element structure, performance criteria, and critical aspects reviewed to reflect workplace requirements
Skills and knowledge requirements and the range statement updated

Unit Descriptor

This unit of competency specifies the outcomes required to capture new data using a variety of methods. It requires the ability to plan and execute the data capture process in a supervisory capacity, incorporating technical problems and management requirements and applying appropriate solutions to a range of data collection situations. Functions would be carried out within organisational guidelines.

Application of the Unit

This unit of competency supports the application of theoretical and practical analysis; organisational, team leadership and sound problem-solving skills; the ability to demonstrate initiative and enterprise; and a sound understanding of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in surveying, cartography, town planning, mapping or geographic information systems.

Licensing/Regulatory Information

Licensing, legislative, regulatory and certification requirements may impact on this unit. Incorporate these requirements according to state, territory and federal legislation.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for data collection.	1.1	Key activities and timelines are scheduled with full consideration given to specification, available resources and organisational requirements.
		1.2	***Administrative and legal requirements*** for data collection are complied with and recorded.
		1.3	***Appropriate persons or relevant personnel*** are informed about the project.
		1.4	***Equipment, supplies and spatial information services (SIS) technologies*** are selected according to the task requirements.
		1.5	Designated responsibilities are communicated to staff to ensure clarity of understanding of the work and provide a basis for ongoing assessment.
2	Gather data.	2.1	Equipment is operated according to ***manufacturer specifications***, and statutory and organisational guidelines.
		2.2	***Entities*** are related to a ***reference system*** based on the specifications.
		2.3	Data and ***attributes*** are collected using methodologies detailed in the ***data capture methodology***.
		2.4	***Metadata*** is documented according to accepted industry standards.
		2.5	Discrepancies between specifications and actual activities are identified, recorded and reported.

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		2.6	Administrative and legal requirements for data collection are complied with and recorded.
		2.7	Guidance is given to staff assisting in the data collection process.
		2.8	***OHS requirements*** are planned for and adhered to.
3	Use equipment.	3.1	Appropriate equipment is selected.
		3.2	Equipment is operated according to the task requirements and manufacturer specifications.
		3.3	All safety requirements are adhered to.
4	Maintain equipment.	4.1	***Operational maintenance*** of equipment is undertaken according to organisational guidelines.
		4.2	***Contingencies*** that may affect equipment usage are reported.
		4.3	Unsafe or faulty equipment is reported and referred for repair.
		4.4	Tools and equipment are stored safely in appropriate locations and according to manufacturer specifications.
5	Finalise the collection process.	5.1	Attributes and ***topological structures*** are added to spatial data according to specifications.
		5.2	Data is recorded correctly and ***required documentation*** is completed according to specifications and organisational requirements.
		5.3	Data and documentation are stored according to organisational requirements.
		5.4	Data integrity is checked according to the validation plan.

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Required Skills and Knowledge

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills

- analytical skills to analyse theory, concepts and statistics
- communication skills to:
  - consult effectively with clients and colleagues
  - impart knowledge and ideas through oral, written and visual means
  - provide customer service
- computer skills to complete business documentation
- functional application of data capture techniques
- literacy skills to:
  - assess and use workplace information
  - read and write technical reports
  - research and evaluate
- numeracy skills to:
  - analyse errors
  - conduct image analysis
  - perform mental calculations
  - interpret and analyse statistics
  - record with accuracy and precision
  - undertake computations
- planning and organising skills to:
  - coordinate technical and human resource inputs to research activities
  - plan for equipment and supplies required to capture spatial data
  - prioritise activities to meet contractual requirements
- project management skills to provide guidance to staff and organise data capture operations
- spatial skills to:
  - display proficiency in the operation of spatial data capture equipment
  - exercise precision and accuracy in relation to spatial and aspatial data acquisition and the use of electronic equipment
  - archive and retrieve spatial data
  - manage and manipulate spatial data
  - manage files
- solve problems relating to height, depth, breadth, dimension, direction and position

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in actual operational activity and virtual representation
- work effectively as part of a team

Required knowledge

- characteristics, capabilities and limitations of tools, technology and equipment used
- customer relations guidelines
- data collection techniques as applied to the use of:
  - data collection equipment for electronic and hard copy data
  - spatial data
  - topographical structures
- information management procedures
- OHS requirements relating to field activity and computer operations
- organisational policies and guidelines relating to spatial data capture techniques
- process improvement methods
- quality assurance principles to validate spatial data captured
- quality improvement tools
- reference systems and their relationship to each other
- relevant federal, state and local government laws which are applicable to the spatial data capture methodology used
- risk assessment principles relating to data capture operations
- safe work practices
- spatial data formats, handling and structure
- spatial information principles and their application
- SIS project contingencies
- spatial technologies

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment

This unit of competency could be assessed on its own or in combination with other units relevant to the job function, for example CPPSIS5031A Plan spatial data collection and validation, CPPSIS5035A Obtain and validate spatial data, CPPSIS5036A Integrate spatial datasets, CPPSIS5037A Maintain complex spatial data systems, and CPPSIS5038A Develop a complex spatial and aspatial database.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- using data collection methods to capture spatial data
- using and maintaining equipment used in the capture of spatial data
- operational knowledge in relevant data capture and validation methodologies.

Specific resources for assessment

Resource implications for assessment include access to:

- assessment instruments, including personal planner and assessment record book
- assignment instructions, work plans and schedules, policy documents and duty statements
- registered training provider of assessment services
- relevant guidelines, regulations and codes of practice
- suitable venue and equipment.

Access must be provided to appropriate learning and assessment support when required.

Where applicable, physical resources should include equipment modified for people with disabilities.

Context of assessment

Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.

Method of assessment

Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment).

Demonstrated competency in a range of situations,

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which may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace.

Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation in realistic simulated environments may be substituted.

Guidance information for assessment

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of SIS requirements to assess competency.

Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical).

Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff.

All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory.

Where assessment is for the purpose of recognition (recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.

Assessment processes will be appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

Range Statement

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The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Administrative and legal requirements may include:

- access protocols and obligations
- Australian standards, quality assurance and certification requirements
- award and enterprise agreements
- company OHS guidelines
- licensing arrangements
- organisational protocols for accessing physical, financial and human resources
- reimbursements
- Indigenous considerations
- relevant codes of practice
- relevant state, territory or federal legislation that affects organisational operations, including:
  - anti-discrimination and diversity
  - copyright and digital copyright
  - industrial relations
- royalty obligations
- title search processes.

Appropriate persons or relevant personnel may include:

- administrative staff
- assessors
- colleagues
- contractors
- field survey staff
- land occupiers
- land owners
- managers
- supervisors
- technicians
- trainers.

Equipment, supplies and SIS technologies may include:

- data logger or other mobile computing device
- data recording equipment
- digital imagery
- electronic theodolites
- handheld global navigation satellite system (GNSS)
- levels
- maps (digital or hard copy)

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- measuring instruments
- non-navigational aids relevant to duties, including:
  - compass
  - clinometer
  - distance measuring wheel
  - personal digital assistant
- personal computer-based digitising boards
- sonar
- tide gauge
- tools
- total station
- ultra high frequency (UHF) radio
- vehicles.

Manufacturer specifications may be found in:

- electronic format
- equipment specifications
- operator manuals
- printed product instructions and information
- spatial database
- warranty documents.

Entities may include:

- event
- object.

Reference system may include coordinate systems that are:

- global
- local
- regional.

Attributes are properties associated with a dataset and may include:

- condition
- date
- size
- type.

Data capture methodology may include:

- aerial
- conversion or translation from existing information (hard copy or digital)
- data logging
- digitising theodolite
- direct or indirect
- field
- GNSS scanning
- manual entry
- photogrammetry
- remote sensing
- sonar
- survey

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- total station.

Metadata may include:

- summarised information about a spatial dataset that describes the characteristics of the dataset, including:
  - availability
  - conditions of use
  - coordinate system
  - currency
  - date of acquisition
  - quality
  - source
  - spatial data acquisition methodologies
  - version control.

OHS requirements may include:

- Australian standards
- development of site safety plan
- identification of potential hazards
- inspection of work sites
- training staff in OHS requirements
- use of personal protective clothing
- use of safety equipment and signage.

Operational maintenance tasks may include:

- adjusting
- cleaning
- lubricating
- maintaining battery
- simple repairs
- tightening.

Contingencies may include:

- adverse weather
- equipment failure.

Topological structures may include:

- relationship between entities.

Required documentation may include:

- accident and injury reports
- authority/approval documentation
- meeting reports
- records and reports of communication
- reimbursement documentation.

Unit Sector(s)

Surveying and spatial information services

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Custom Content Section

Not applicable.

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CPPSIS5035A Obtain and validate spatial data

Modification History

Unit revised and not equivalent to CPPSIS5005A Obtain and validate existing spatial data
New unit title
Element structure, performance criteria, and critical aspects reviewed to reflect workplace requirements
Skills and knowledge requirements and the range statement updated

Unit Descriptor

This unit of competency specifies the outcomes required to obtain and validate spatial datasets. It requires the ability to plan and execute the data validation process, often in a supervisory capacity, incorporating technical problems and management requirements. Functions would be carried out within organisational guidelines.

Application of the Unit

This unit of competency supports the application of organisational, sound communication, negotiation and problem-solving skills; the ability to demonstrate initiative and enterprise; and an understanding of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in surveying, cartography, town planning, mapping or geographic information systems.

Licensing/Regulatory Information

No licensing, legislative and regulatory requirements apply to this unit at the time of endorsement.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Obtain data.	1.1	***Client instructions*** are analysed to ***determine specific needs*** and ***spatial data requirements***.
		1.2	Data requirements are based on ***specifications*** and confirmed with ***relevant personnel***.
		1.3	Protocols for communication between ***spatial data providers*** and the organisation are followed.
		1.4	Work is allocated to relevant personnel.
		1.5	***Advice*** is sought from relevant personnel to assess the viability of the providers' service ***agreement***.
		1.6	***Collection options*** are determined according to organisational guidelines.
		1.7	Data is received and processed according to ***organisational guidelines***.
2	Validate data supplied.	2.1	Data is assessed for ***validity*** and ***integrity*** according to specifications.
		2.2	Omissions and gaps in the spatial data are communicated and followed through to resolution with relevant personnel.
		2.3	***OHS*** issues are considered at all times.

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3	Complete documentation.	3.1	***Metadata*** is recorded according to industry standards.
		3.2	***Required documentation*** is ***stored*** according to organisational requirements.

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Required Skills and Knowledge

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills

- communication skills to:
  - consult effectively with clients and colleagues
  - impart knowledge and ideas through oral, written and visual means
- computer skills to complete spatial data documentation
- initiative and enterprise skills to:
  - delegate duties
  - undertake day-to-day human resource management and business negotiation
- literacy skills to:
  - assess and use workplace information
  - read and interpret datums and projections
  - read and write technical reports
  - research and evaluate
- numeracy skills to:
  - analyse errors
  - conduct image analysis
  - perform mental calculations
  - interpret and analyse statistics
  - record with accuracy and precision
  - undertake computations
- organisational skills to:
  - coordinate technical and human resource inputs to research activities
  - prioritise activities to meet contractual requirements
  - quality assurance
- spatial skills to:
  - display proficiency in the operation of spatial data capture equipment
  - exercise precision and accuracy in relation to spatial and aspatial data acquisition using electronic equipment
  - archive and retrieve spatial data
  - manage and manipulate spatial data
  - manage files

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Required knowledge

- classification systems, processes and products linked to specification
- industry standards relating to obtaining and validating spatial data
- information management procedures
- legislation as it applies to the spatial industry sector
- methods of assessing spatial datasets and dataset sources
- need for precision and accuracy in relation to spatial data acquisition
- organisational policies and guidelines, such as pricing and working within budgetary constraints
- quality assurance principles
- spatial data capture methodologies
- spatial data management practices
- spatial data formats and structure
- spatial information principles and their application
- spatial referencing systems
- spatial technologies to locate and validate spatial data

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment

This unit of competency could be assessed on its own or in combination with other units relevant to the job function, for example CPPSIS5031A Plan spatial data collection and validation, CPPSIS5032A Capture new spatial data, CPPSIS5036A Integrate spatial datasets, CPPSIS5037A Maintain complex spatial data systems, and CPPSIS5038A Develop a complex spatial and aspatial database.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- sourcing data according to agreed processes and protocols and that it satisfies requirements
- applying cost considerations
- assessing and acting upon contingencies
- knowledge of spatial data access and validation processes.

Specific resources for assessment

Resource implications for assessment include access to:

- assessment instruments, including personal planner and assessment record book
- assignment instructions, work plans and schedules, policy documents and duty statements
- registered training provider of assessment services
- relevant guidelines, regulations and codes of practice
- suitable venue and equipment.

Access must be provided to appropriate learning and assessment support when required.

Where applicable, physical resources should include equipment modified for people with disabilities.

Context of assessment

Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.

Method of assessment

Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment).

Demonstrated competency in a range of situations, that may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace.

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Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation in realistic simulated environments may be substituted.

Guidance information for assessment

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of surveying and spatial information services requirements to assess competency.

Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical).

Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff.

All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory.

Where assessment is for the purpose of recognition (recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.

Assessment processes will be appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional

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contexts.

Client instructions refer to description of outputs and may be contained in:	• contracts • memos • tender briefs • verbal instructions • written instructions.
Determine specific need may be conducted via:	• response to a direction regarding scope and needs • independent assessment.
Spatial data requirements may include:	• administration (e.g. postcodes, suburbs, and federal and state electoral counties) • analysis of environmental, land and geographic information • asset management • cartographic services • civil engineering • digital imagery • electricity • emergency services management • environmental datasets • geographic information systems • integrated services – environmental, land and geographic related datasets • land ownership tenure system • local government • location-based services • global positioning • mapping facilities • site analysis • survey marks • sewerage • telecommunications • town planning • utility services such as water.
Specifications refer to:	• detailed technical description of the spatial data and its qualifiers.
Relevant personnel may include:	• colleagues • registered surveyors • company personnel • staff or employee representatives • supervisors or line managers • suppliers

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	• users.
Spatial data providers may include:	• associations • clearing houses • educational institutions • government • internal sources • non-government agencies • online services • software providers • specialist companies.
Advice may include information from:	• financial or legal specialists • internal and external personnel • management • registered surveyors • town planners.
Agreement may include:	• contract • copyright • licence • royalty contract • memorandum of understanding.
Collection options may include:	• data logging • digitising theodolite • global position system • photogrammetry • remote sensing • scanning • sonar • survey • total station.
Organisational guidelines may include:	• code of ethics • company policy • legislation relevant to the work or service function • manuals • OHS policies and procedures • personnel practices and guidelines outlining work roles and responsibilities.
Validity means reflecting the true state of a test result, including tests for systematic distortions such as:	• confounding bias • information/data bias • observational bias • recall bias • selection bias.

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Integrity may include:
- authenticity
- relevance to the project.

OHS may include:
- Australian standards
- development of site safety plan
- identification of potential hazards
- inspection of work sites
- training staff in OHS requirements
- use of equipment and signage.

Metadata may include:
- summarised information about a spatial dataset that describes the characteristics of the dataset, including:
  - availability
  - conditions of use
  - coordinate system datum
  - currency
  - date of acquisition
  - quality
  - source
  - spatial data acquisition methodologies
  - version control.

Required documentation may include:
- electronic or paper-based correspondence with client
- field records
- final report
- records of conversation
- survey plots
- organisational work activity sheets.

Stored may include:
- activity and sequence of activity determined to be appropriate in order to meet project objectives.

Unit Sector(s)

Surveying and spatial information services

Custom Content Section

Not applicable.

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CPPSIS5036A Integrate spatial datasets

Modification History

Unit revised and not equivalent to CPPSIS5006A Integrate spatial datasets
Element structure, performance criteria, and critical aspects reviewed to reflect workplace requirements
Skills and knowledge requirements and the range statement updated

Unit Descriptor

This unit of competency specifies the outcomes required to integrate spatial datasets including linking spatial, aspatial and attribute data for the purpose of providing spatially referenced information. It requires the ability to apply theoretical spatial concepts to a range of situations in order to correctly identify and integrate the appropriate information. Functions would be carried out within organisational guidelines.

Application of the Unit

This unit of competency supports the application of self-management skills, planning and organising within data management and data manipulation, and the use of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in surveying, cartography, town planning, mapping or geographic information systems.

Licensing/Regulatory Information

No licensing, legislative and regulatory requirements apply to this unit at the time of endorsement.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Confirm task.	1.1	***Client specifications*** are analysed to determine specific needs and required outcomes.
		1.2	Requirements for spatial data and ***constraints*** are identified through further consultation with ***client*** or ***relevant personnel*** and outcomes are recorded according to ***organisational guidelines***.
2	Obtain spatial and attribute data.	2.1	Sources are determined consistent with specifications using relevant ***metadata***.
		2.2	Data is obtained according to organisational guidelines.
		2.3	Data is checked for integrity and quality.
		2.4	Geographic coverage is assessed for completeness.
		2.5	A metadata set is compiled based on sourced spatial data.
		2.6	***Exception reports*** are referred to relevant personnel.
		2.7	***OHS*** requirements are planned for and adhered to.
3	Create resultant spatial dataset.	3.1	***Filtering parameters*** are established in line with scientific accuracy, redundancy, and client and organisational requirements.
		3.2	Spatial and ***aspatial*** data is translated into a format which satisfies specifications.
		3.3	***Spatial datasets*** are populated with edited spatial data

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			according to ***organisational spatial requirements***.
		3.4	Spatial and ***attribute*** data are linked according to specifications and industry standards.
4	Link spatial and attribute data.	4.1	Method required for referencing the location of the attribute data is identified.
		4.2	Linking of the spatial and attribute data is completed according to the specifications.
		4.3	Spatial queries are carried out via the spatial data to access the attribute data.
5	Test and validate spatial datasets.	5.1	***Test queries*** are determined and implemented to ensure spatial datasets meet specifications.
		5.2	Spatial data is checked to ensure correctness of links.
		5.3	An exception report is developed according to organisational guidelines and reported back to relevant personnel.
		5.4	***Relevant documentation*** is completed according to organisational guidelines.
		5.5	Quality and useability of datasets are ensured according to organisational guidelines.

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Required Skills and Knowledge

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills

- ability to translate requirements into design
- analytical skills, including systems analysis
- communication skills to:
  - consult effectively with clients and colleagues
  - impart knowledge and ideas through oral, written and visual means
- computer skills to complete business documentation and apply software and hardware
- literacy skills to:
  - assess and use workplace information
  - read and write technical reports
  - research and evaluate in order to assess sources of spatial data
- numeracy skills to:
  - analyse errors
  - conduct image analysis
  - perform mental calculations
  - interpret and analyse statistics
  - record with accuracy and precision
  - undertake computations
- organisational skills to:
  - coordinate technical and human resource inputs to research activities
  - manage information
  - prioritise activities to meet contractual requirements
- spatial skills to:
  - exercise precision and accuracy in relation to spatial and aspatial data integration
  - archive and retrieve spatial data
  - manage and manipulate spatial data
  - manage files

Required knowledge

- classification systems, processes and products
- coordinating reference systems

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- high-level computer knowledge
- industry standards and organisational policies and guidelines relating to spatial datasets
- key characteristics of spatial and aspatial data
- key features of spatial data storage technology
- precision and accuracy in relation to spatial information
- principles of data acquisition (e.g. photogrammetry, remote sensing, terrestrial survey and hydrography)
- quality guidelines regarding the validity of spatial data
- reference systems and their relationship to each other
- relevant spatial database design tools
- security management guidelines
- spatial database operation
- spatial data handling
- spatial data management practices
- spatial dataset integration, including the role of scale in dataset integration
- spatial data structure requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment

This unit of competency could be assessed on its own or in combination with other units relevant to the job function, for example CPPSIS5031A Plan spatial data collection and validation, CPPSIS5032A Capture new spatial data, CPPSIS5035A Obtain and validate spatial data, CPPSIS5037A Maintain complex spatial data systems, CPPSIS5038A Develop a complex spatial and aspatial database, and CPPSIS5059A Determine suitable information sources to create new spatial datasets.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- devising and implementing a cost-effective, functional solution to spatial datasets
- measuring outcomes against specifications
- obtaining spatial and attribute data
- testing and validating spatial datasets
- knowledge of data acquisition methods.

Specific resources for assessment

Resource implications for assessment include access to:

- assessment instruments, including personal planner and assessment record book
- assignment instructions, work plans and schedules, policy documents and duty statements
- registered training provider of assessment services
- relevant guidelines, regulations and codes of practice
- suitable venue and equipment.

Access must be provided to appropriate learning and assessment support when required.

Where applicable, physical resources should include equipment modified for people with disabilities.

Context of assessment

Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.

Method of assessment

Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment).

Demonstrated competency in a range of situations, that

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may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace.

Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation in realistic simulated environments may be substituted.

Guidance information for assessment

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of surveying and spatial information services requirements to assess competency.

Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical).

Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff.

All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory.

Where assessment is for the purpose of recognition (recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.

Assessment processes will be appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

Range Statement

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The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Client specifications refer to description of outputs and may be contained in:

- contracts
- memos
- tender briefs
- verbal instructions
- written instructions.

Constraints may include:

- coverage
- datum
- environmental factors
- industry requirements
- legal and statutory
- financial
- resource availability
- time.

Client may include:

- customers with routine or special request
- external to organisation
- internal to organisation
- regular and new customers, including:
  - business enterprises
  - government agencies
  - members of the public
  - suppliers.

Relevant personnel may include:

- colleagues
- staff or employee representatives
- supervisors or line managers
- suppliers
- users.

Organisational guidelines may include:

- code of ethics
- company policy
- legislation relevant to the work or service function
- manuals
- OHS policies and procedures
- personnel practices and guidelines outlining work roles and responsibilities.

Metadata may include:

- summarised information about a spatial dataset that describes the characteristics of the dataset, including:
  - availability
  - conditions of use

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- coordinate system
- currency
- date of acquisition
- quality
- source
- spatial data acquisition methodologies
- version control.

Exception reports may include:

- information on non-conforming items that require attention by other functions.

OHS may include:

- Australian standards
- development of site safety plan
- identification of potential hazards
- inspection of work sites
- training staff in OHS requirements
- use of personal protective clothing
- use of safety equipment and signage.

Filtering parameters may include:

- attribute range accuracy
- geographic location.

Aspatial data refers to:

- data without a spatial component.

Spatial datasets may include:

- digital
- hard copy
- image
- propriety standards
- text or vector.

Organisational spatial requirements may include:

- administration (e.g. postcodes, suburbs, and federal and state electoral counties)
- analysis of environmental, land and geographic information
- asset management
- cartographic services
- civil engineering
- digital imagery
- electricity
- emergency services management
- environmental datasets
- geographic information systems
- hydrography
- integrated services – environmental, land and geographic related datasets
- land ownership tenure system
- local government

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- location-based services
- global positioning
- mapping facilities
- photogrammetry
- remote sensing
- site analysis
- survey marks
- sewerage
- telecommunications
- terrestrial survey
- town planning
- utility services such as water
- water catchment.

Attributes are properties associated with an entity and may include:

- colour
- layer
- level
- line type and width
- text.

Test queries refer to:

- model set of questions with known answers.

Relevant documentation may include:

- electronic or paper-based correspondence with client
- final report
- records of conversation
- organisational work activity sheets.

Unit Sector(s)

Not applicable.

Custom Content Section

Not applicable.

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FPICOT2239A Trim and cut felled trees

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit describes the outcomes required to trim and cut felled trees with a chainsaw. It is intended for use in situations where the production of timber is not the primary focus of the activity. The unit also includes equipment maintenance

General workplace legislative and regulatory requirements apply to this unit; specific licensing or certification requirements may apply in some states and territories

This unit replaces FPICOT2221A Trim and cross cut felled trees

Application of the Unit

Application of the unit

This unit involves trimming and cutting felled trees with a chainsaw in a variety of work settings including a forest, agriculture, domestic, local council and emergency services environment, as relevant to the unit

The skills and knowledge required for competent workplace performance are to be used within the scope of the person's job and authority

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability skills This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for trimming and cutting	1.1. Applicable ***Occupational Health and Safety*** (***OHS***), environmental, ***legislative*** and ***organisational requirements*** and manufacturer's specifications relevant to trimming and cutting felled ***trees*** are identified and followed
	1.2. Site ***environmental protection measures*** and enterprise environmental management systems are identified and adhered to in line with relevant legislation and regulations
	1.3. ***Job requirements*** are reviewed and clarified with ***appropriate personnel***
	1.4. Trimming and cutting activities are planned in line with site procedures
	1.5. ***Tools and equipment*** are selected appropriate to work requirements and checked for operational effectiveness in line with organisational procedures and manufacturer's recommendations
	1.6. ***Communication*** with others is established and maintained in line with OHS requirements
2. Visually assess felled trees	2.1. Trees to be trimmed and cut are identified in line with job requirements
	2.2. ***Environmental requirements*** are identified and used to plan the trimming and cutting activities
	2.3. Tree, location and stability are assessed for conditions likely to affect safety of trimming and cutting activities
	2.4. Tree is visually assessed for ***defects***
	2.5. ***Stresses*** within the tree are identified
	2.6. Trees unable to be cut safely are identified and referred to appropriate personnel
3. Plan cutting	3.1. Tree is moved or stabilised for safe cutting in line with site standards and regulations
	3.2. ***Cutting pattern*** is selected to optimise time and manageable removal of the sections
	3.3. Options for utilisation of product are identified
	3.4. ***Sequence of cuts*** is planned to maintain control of

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ELEMENT	PERFORMANCE CRITERIA
	cut sections and minimise cutting problems
	3.5. Cut location is determined with consideration of tree stresses
4. Conduct trimming and cutting	4.1. ***Debris*** is cleared from the work area to prevent saw damage or injury in line with OHS requirements
	4.2. ***Pre start-up*** checks are carried out on equipment in line with site requirements
	4.3. Movement and whereabouts of other personnel is monitored and work is modified in line with OHS regulations
	4.4. Tree section on each side of planned cut is secured and potential movement is assessed and planned
	4.5. Chainsaw is operated to cut tree and limbs with ***cutting techniques*** adjusted in response to movement and condition of the tree/limbs
	4.6. Trimming and cutting is completed in line with OHS and job requirements
	4.7. Trimming and cutting ***records*** are prepared and problems reported to the appropriate personnel
5. Conduct equipment ***maintenance***	5.1. Equipment is inspected on completion of trimming and cutting activities
	5.2. Damaged saws and cutting attachments are identified for repair or replacement in line with organisational requirements and manufacturer's recommendations
	5.3. Chain and other components are removed, cleaned, maintained, adjusted or replaced in line with manufacturer's recommendations
	5.4. Tools and equipment are maintained in line with OHS requirements and manufacturer's recommendations

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

- Technical skills sufficient to select, use and maintain relevant equipment to safely trim and cut felled trees in a range of situations
- Ability to assess the implications related to identified stresses of the tree
- Communication skills sufficient to interact with colleagues and others
- Literacy skills sufficient to review and accurately identify work requirements and to locate, record and report information
- Numeracy skills sufficient to estimate and measure tolerances and minimum diameter, and calculate time to complete tasks
- Problem solving skills sufficient to identify problems, equipment faults and apply appropriate response procedures

Required knowledge

- Applicable Commonwealth, State or Territory legislation, regulations, standards, codes of practice and established safe practices relevant to the full range of processes for trimming and cutting felled trees
- Industry, organisational and site standards, requirements, policies and procedures for trimming and cutting felled trees
- Environmental protection requirements, including the safe disposal of waste material
- Characteristics of trees and types of timber defects that may affect cutting
- Cutting patterns, sequences and techniques
- Chainsaw operation, safety and maintenance procedures
- Risk assessment processes
- Problem identification and resolution strategies and common fault finding techniques
- Types of tools and equipment and procedures for their use, operation and maintenance for trimming and cutting felled trees
- Procedures for reporting workplace records and information

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to provide evidence that they can safely and

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EVIDENCE GUIDE

	efficiently trim and cut felled trees and conduct equipment maintenance within industry and organisational requirements
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements of this unit and include demonstration of: • following applicable Commonwealth, State or Territory legislative and regulatory requirements and codes of practice, including OHS and environmental, relevant to trimming and cutting felled trees • following industry and organisational policies and procedures relevant to trimming and cutting felled trees • effective communication and safe working practices • planning of trimming and cutting activities in line with site standards and regulations • trimming and cutting of felled trees in line with job requirements in a range of workplace situations • equipment maintenance
Context of and specific resources for assessment	• Competency is to be assessed in the workplace or realistically simulated workplace • Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints • Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context • Assessment is to comply with relevant regulatory or Australian Standards requirements • The following resources should be made available: • workplace location or simulated workplace • materials and equipment relevant to undertaking work applicable to this unit • specifications and work instructions
Method of assessment	• Assessment must satisfy the endorsed Assessment Guidelines of the FPI11 Training Package • Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge • Assessment must be by direct observation of tasks,

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EVIDENCE GUIDE

with questioning on underpinning knowledge and it must also reinforce the integration of employability skills

- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency
- The assessment environment should not disadvantage the candidate
- Assessment practices should take into account any relevant language or cultural issues related to Aboriginality, gender or language backgrounds other than English
- Where the participant has a disability, reasonable adjustment may be applied during assessment
- Language and literacy demands of the assessment task should not be higher than those of the work role

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

OHS requirements: are to be in line with applicable Commonwealth, State or Territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing

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RANGE STATEMENT

safety equipment

- first aid equipment
- fire fighting equipment
- communications equipment
- location of other workers
- hazard and risk control
- fatigue management
- elimination of hazardous materials and substances
- safe workplace practices including required actions relating to forest fire
- awareness of danger zone for kickback
- manual handling including shifting, lifting and carrying
- erection of warning signs
- potential falling objects
- procedures for cutting on slopes

Legislative requirements: are to be in line with applicable Commonwealth, State or Territory legislation, regulations, certification requirements and codes of practice and may include:

- Australian Standards
- OHS
- the environment
- equal opportunity
- relevant industry codes of practice
- award and enterprise agreements
- industrial relations
- confidentiality and privacy
- duty of care
- heritage and traditional land owner issues

Organisational requirements may include:

- legal
- organisational and site guidelines
- policies and procedures relating to own role and responsibility
- quality assurance
- procedural manuals
- quality and continuous improvement processes and standards
- OHS
- emergency and evacuation procedures

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RANGE STATEMENT

	• fire prevention procedures • recording and reporting requirements • equipment use and maintenance and storage requirements • environmental management requirements (waste disposal, recycling and re-use guidelines) • access and equity principles and practices
Trees may include:	• hardwood trees • softwood trees
Environmental protection measures may include:	• action to limit the impact of noise, wind speed and direction, fallen trees, ground slope, ground hazards and obstacles, general forest lean • action to limit the impact to ground growth, canopy, density of trees and may relate to: • soil and water protection • contingencies for modifying operations during wet or other adverse weather conditions • the safe disposal of waste material
Job requirements	refer to information and instructions relevant to trimming and cutting operations including: • size • length • quantity and grade • removal status
Appropriate personnel may include:	• supervisors • clients • colleagues • line management
Tools and equipment may include:	• chainsaws • Personal Protective Equipment (PPE) • maintenance tools • fuel and oil containers and ancillary equipment, which may include: • hammer • axe • wedges

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RANGE STATEMENT

- cant hook or breaking bar
- first aid kit
- fire control equipment
- tool belt
- loggers tape
- warning signs
- chainsaw maintenance kit

Communication may include:

- verbal and non-verbal language
- hand or other agreed signals
- eye contact with other operators or personnel
- use of electronic devices

Environmental requirements may be assessed in relation to:

- ground growth
- ground slope
- ground hazards and obstacles

and may include environmental protection measures to:

- limit the impact of noise, fumes in enclosed spaces, waste, fire, disposal of fuel and oil
- limit the impact on flora, fauna and habitat

Defects may include:

- splits
- falling damage
- fire damage
- infestation
- pipe
- shake
- twist
- branch/knot locations

Stresses may include:

- tension (fibres being stretched)
- compression (fibres being squashed)
- neutral fibres

Cutting pattern refers to:

- the best direction or angle for making a cut

Sequence of cuts refers to:

- the plan of cuts to optimise time and recovery of logs

Debris may include:

- stones
- rocks
- loose branches
- other timber

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RANGE STATEMENT

	• woody material • any loose hazards underfoot or in escape path • any material underfoot or in the cutting area which may impinge on safe cutting procedures
Pre start-up checks may include:	• checking that equipment is suitable for task and has been set up correctly • checking that systems are performing accurately • checking equipment is operating to optimum performance
Cutting techniques may include:	• bridging cuts • swinging cuts • side bind cuts • delimbing • boring • wedge cuts • ripping cuts
Records may include:	• quality outcomes; hazards, incident reports, equipment malfunctions and damage and may be compiled using a computer-based system or another appropriate organisational communication system to record and report
Maintenance must include:	• sharpening and may include: • refuelling • inspection, identification and replacement of bar, chain, drive sprockets • bar oil checks and top up • air filter check, clean and replacement • cleaning of saw body, air intake vents and cooling fans • fitting spare chain and tension chain

Unit Sector(s)

Not Applicable

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Competency field

Competency field Common Technical

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FPIFGM3212 Fall trees manually (intermediate)

Modification History

Version	Detail
1	Unit replaces FPIFGM3204A Fall trees manually (intermediate)

Unit Descriptor

This unit describes the outcomes required to assess, plan and safely carry out manual tree-felling operations using a chainsaw in a non-production environment. This unit covers the felling procedures for trees with a level of complexity that requires significant tree assessment and practical felling skills. Persons competent in this unit should be able to effectively fell most trees with the exception of the very large and those that have significant defects and/or characteristics causing excessive complexity.

Techniques for trees with a diameter greater than the bar length would generally be regarded as within the scope of this unit.

Application of the Unit

This unit involves felling trees in a non-production environment. It applies to a forest, rural and community environment.

These skills and knowledge are to be used within the scope of the person's job and authority.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply in various jurisdictions.

Pre-Requisites

Not applicable

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Employability Skills Information

This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for felling	1.1 Identify and comply with applicable ***occupational health and safety*** (OHS), environmental, ***legislative*** and ***organisational requirements*** relevant to felling trees
	1.2 Identify and adhere to site ***environmental protection measures*** according to relevant legislation and regulations
	1.3 Review and check ***job requirements*** with ***appropriate personnel*** as required
	1.4 Sharpen and adjust chainsaw or change components according to manufacturer recommendations
	1.5 Assess tree and determine felling requirements
	1.6 Identify and control potential and existing risks and ***hazards*** in the work area
	1.7 Identify trees to be retained and felled
	1.8 Establish and maintain ***communication*** with others according to OHS requirements
2. Visually assess site conditions and surroundings	2.1 Identify and comply with site environmental concerns according to relevant federal, state or territory legislation and local regulations
	2.2 Review terrain and slope to determine if they add complexity to the operation
	2.3 Maintain awareness of ***environmental conditions*** and other personnel activity in the work area and modify felling activity where required
	2.4 Assess general factors affecting felling requirements and detect and control specific forest or site risks and hazards
3. Assess tree and plan felling	3.1 Visually assess tree for felling characteristics
	3.2 Select ***tools and equipment*** appropriate to work requirements and check them for operational effectiveness according to manufacturer recommendations
	3.3 Identify trees to be felled for size, significant defects and any characteristics causing excessive complexity
	3.4 Assess and progressively plan tree-felling sequence for individual trees
	3.5 Assess and check required falling direction and possible deviation

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ELEMENT	PERFORMANCE CRITERIA
	3.6 Plan sequence of cuts to fell tree according to standard felling procedures
	3.7 Select suitable escape route
	3.8 Assess ***limitations*** of own skills in safely felling trees, identify ***trees considered outside own skill level*** and seek assistance from appropriate personnel where required
	3.9 Monitor and exclude location and activity of other personnel on the work site
4. Apply tree-felling techniques	4.1 Select suitable escape route and clear of growth and other obstacles according to environmental care principles and statutory requirements
	4.2 Fell individual trees using planned ***techniques*** according to site requirements, at a safe distance from other personnel in the work area
	4.3 Adjust cutting technique in response to movement and condition of tree
	4.4 Use planned escape route when tree starts to fall and monitor the fall and movement of tree on ground until determined stable
	4.5 Identify procedures for removal of trees that are hung-up
	4.6 Detect, rectify and report blunt or damaged saw chain according to workplace procedures
	4.7 Monitor chainsaw for operational effectiveness and record and report faults, malfunctions and problems according to workplace procedures

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Required Skills and Knowledge

Required skills:

- Technical skills to:
  - use and maintain relevant tools and equipment
  - safely operate and maintain a chainsaw
  - assess, plan and carry out tree-felling operations appropriate to site conditions
- Communication skills to:
  - use appropriate communication and interpersonal techniques and methods with colleagues and others
  - use hand signals with other operators to maintain effective and safe tree felling
- Literacy skills to:
  - locate and report information
  - interpret, apply and convey information in written, diagrammatic and/or verbal form
- Numeracy skills to:
  - estimate tree height
  - calculate product mass and determine tree fall zone
  - measure tree length and diameter
- Problem-solving skills to:
  - review and identify work requirements
  - recognise own limitations in conditions and trees for felling
  - identify problems and equipment faults and demonstrate appropriate response procedures
  - apply safe work practices, including using personal protective equipment (PPE) and controlling hazards
  - comply with legislation, regulations, standards, codes of practice and established safe practices and procedures for felling trees manually
- Planning and organising skills to plan work to site requirements

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Required knowledge:

- Basic knowledge of applicable federal, state or territory legislation, regulations, standards and codes of practice relevant to the full range of processes for felling trees manually
- Environmental protection requirements, including the safe disposal of waste material
- Organisational and site standards, requirements, policies and procedures for felling trees manually
- Types of tools and equipment for felling trees manually, and the procedures for their safe use, operation and maintenance
- Problem identification and resolution strategies and common fault-finding techniques
- Established communication channels and protocols
- Procedures for identifying and evaluating structural defects and stresses in trees
- Types and purposes of a range of cuts to fell trees
- Operational principles and limitations of a chainsaw
- Procedures for recording and reporting workplace information
- Chainsaw product specifications

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to provide evidence that they can assess, plan and safely and efficiently operate chainsaw equipment to manually fell trees at the intermediate level in a forest environment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements of this unit and include demonstration of:

- compliance with applicable federal, state or territory legislative and regulatory requirements and codes of practice relevant to felling trees manually at an intermediate level
- compliance with organisational policies and procedures relevant to felling trees manually at an intermediate level
- compliance with applicable licensing and certification requirements
- communicating effectively and working safely with others in the work area
- Identifying and describe key features of structural defects and stresses in trees and the impact on
  - conducting an assessment of a range of intermediate trees, and planning and safely felling trees without damage to personnel, equipment and surrounding environment
  - planning felling sequence and preparing surroundings including escape route
- felling a range of intermediate trees using a range of cuts safely without damage to personnel, equipment and surrounding environment
- preparing, operating and maintaining chainsaw equipment and other felling equipment

Context of and specific resources for assessment

- Competency is to be assessed in the workplace or a realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than

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The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

confirmatory questions, will usually be conducted in an off-site context

- Assessment is to comply with relevant regulatory requirements and Australian standards
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials and equipment relevant to undertaking work applicable to this unit
  - specifications and work instructions

Method of assessment

- Assessment methods must satisfy the endorsed Assessment Guidelines of the FPI11 Training Package
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of employability skills
- Assessment methods must confirm the ability to access, interpret and apply the essential underpinning knowledge
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency
- The assessment environment should not disadvantage the candidate
- Assessment practices should take into account any relevant language or cultural issues related to Aboriginality, gender or language backgrounds other than English
- Where the participant has a disability, reasonable adjustment may be applied during assessment
- Language and literacy demands of the assessment task should not be higher than those of the work role

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Range Statement

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording in the Performance Criteria is detailed below.

OHS requirements:

- are to be in accordance with applicable federal, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:
  - PPE and clothing
  - safety equipment
  - first aid equipment
  - firefighting equipment
  - hazard and risk control
  - fatigue management
  - appropriate signage
  - elimination of hazardous materials and substances
  - safe forest practices, including required actions relating to fire
  - techniques for manual handling, including shifting, lifting and carrying

Legislative requirements:

- are to be in accordance with applicable federal, state or territory legislation, regulations, certification requirements and codes of practice and may include:
  - award and organisational agreements
  - industrial relations
  - Australian standards
  - confidentiality and privacy
  - OHS
  - the environment
  - native vegetation
  - equal employment opportunity
  - anti-discrimination
  - relevant industry codes of practice
  - duty of care

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Organisational requirements may include:

- legal compliance documentation
- organisational and site guidelines
- policies and procedures relating to own role and responsibility
- procedural manuals
- quality and continuous improvement processes and standards
- OHS, emergency and evacuation procedures
- ethical standards
- recording and reporting requirements
- equipment use, maintenance and storage requirements
- environmental management requirements, including waste disposal, recycling and re-use guidelines

Trees typical to the scope of this unit may include the following characteristics:

- lean and weight distribution, which can be assessed and readily adapted to falling direction with the use of wedges and/or control with hinge-wood
- various dimensions relative to local forest size distribution
- limited visible damage or defect
- species prone to free splitting and adverse reactions during felling
- a crown that contains dead or broken material, entanglement or malformation and is visible for assessment and monitoring
- single or multi-stems
- diameter of tree greater than chainsaw bar length
- grown on terrain and slope that can add complexity to the operation

Environmental protection measures may include action to limit the impact to:

- native vegetation
- soil and water
- heritage and archeological artefacts
- flora and fauna
- geomorphologic features
- landscape
- external site pollution
- recreational opportunities
- regeneration opportunities

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Job requirements may include:

- information and instructions relevant to tree-felling operations, including processing location details and trees to be felled and retained
- general environmental requirements
- site plan and environmental features

Appropriate personnel may include:

- supervisors
- clients
- colleagues
- managers

Hazards may include:

- uneven or unstable terrain
- unsafe trees
- fires
- overhead and underground services
- excavations
- traffic
- structures
- hazardous materials
- insects and animals
- other personnel and machinery

Communication may include:

- verbal and non-verbal language
- hand or other agreed signals
- eye contact with other operators or personnel
- active listening and questioning to clarify and confirm understanding
- electronic communication devices

Environmental conditions may relate to:

- ground growth
- canopy
- general tree lean
- ground slope
- ground hazards
- wind speed and direction

Tools and equipment may include:

- warning signs
- chainsaw and components
- PPE and clothing

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- first aid equipment
- maintenance requirements
- support tools

Limitations may relate to:

- job role and responsibilities
- own competency level
- industry requirements
- own understanding of risk identification processes
- own interpretation of legislation, regulations and procedures
- complying with OHS requirements

Trees considered outside own skill level include:

- trees that contain hazards and are deemed unsafe
- trees that are considered to be in the advanced category
- trees where cuts made may lead to loss of control of tree in falling

Techniques:

- will include:
  - scarf cutting
  - back cutting to provide hinge-wood and maintain control of tree
- may include:
  - use of wedges to assist in controlling falling direction

Unit Sector(s)

Forest Growing and Management

Competency field

Competency field Forest Growing and Management

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FPPSTM210A Monitor and control boiler operation

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor

This unit describes the outcomes required to monitor and control boiler operation in the pulp and paper industry

General legislation, regulatory, licensing and certification requirements applicable to this unit are detailed in the range statement

Specific high risk licensing requirements for this unit may be applicable and are to be met separately and prior to the achievement of this unit

Application of the Unit

Application of the unit

This unit applies to operators who monitor and control boiler operation in the pulp and paper industry. This work typically involves complex integrated equipment and continuous operations

This unit generally applies to those who:

- confirm operational status
- monitor and control boiler and ancillary plant operation
- handover boiler operations, and
- record and document boiler and plant performance

to meet safety, quality and productivity requirements

It does not include starting up and shutting down of steam boiler operations or troubleshooting and rectifying boiler plant systems

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability skills This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Confirm operational status	1.1. Operational status is confirmed within Occupational Health and Safety (OHS) regulations, environmental and safe working requirements/practices, Standard Operating Procedures (SOP), and housekeeping requirements
	1.2. Production requirements are checked at start of shift to plan the daily activities as required
	1.3. Continuing process supplies are maintained
	1.4. Combustion processes are confirmed to be within operational specifications
	1.5. Boiler performance is recorded in the operational log
	1.6. Operational status is communicated to relevant personnel
2. Monitor and control boiler and ancillary plant operation	2.1. Boiler and ancillary plant operation is monitored and controlled within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements
	2.2. Operational status is confirmed by inspection, observations and other information
	2.3. Water quality tests are conducted and chemical addition adjusted as required
	2.4. Steam pressures are monitored and maintained as required
	2.5. Fuel efficiency calculations and recordings are made
	2.6. Boiler control adjustments are made to maintain operation within specification
	2.7. Pre-treatment systems for water to be monitored, tested and maintained are made up
	2.8. Steam distribution systems are monitored and maintained to client requirements
	2.9. Operator level maintenance is carried out as required
3. Handover boiler operations	3.1. Handover of boiler operations is completed within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements

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ELEMENT	PERFORMANCE CRITERIA
	3.2. Workplace records are maintained in accordance with statutory requirements and workplace procedures
	3.3. Handover is carried out according to workplace procedure
	3.4. Boiler operators are aware of boiler status and related equipment at completion of handover
4. Record and document boiler and plant performance	4.1. Boiler and plant performance is recorded and documented within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements
	4.2. Operating log is maintained
	4.3. Maintenance requirements are identified and documented as required

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the skills and knowledge required for this unit.

Required skills

- Uses required forms of communication in monitoring and controlling boiler operation
- Reads and interprets required documentation, procedures and reports within level of responsibility
- Accesses, navigates and enters computer-based information
- Interprets instruments, gauges and data recording equipment
- Interprets specifications and customer orders
- Identifies and actions problems within level of responsibility
- Identifies and monitors process control points
- Maintains situational awareness in the work area
- Perform tests and interprets and record results as required
- Uses measuring equipment as required
- Conducts pre-operational checks
- Inspects and maintains boiler and ancillary equipment and services to operating standards
- Operates high risk equipment as required

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REQUIRED SKILLS AND KNOWLEDGE

- Analyses and uses sensory information to adjust process to maintain safety, quality and productivity
- Uses electronic and other control systems to control equipment and processes as required

Required knowledge

- Procedures, regulations and legislative requirements relevant to monitoring and controlling boiler operation systems including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping
- Relevant forms of communication
- Basic problem-solving techniques consistent with level of responsibility
- Working knowledge of steam generation plant, processes, layout and associated services including operating parameters, variation and associated adjustments within level of responsibility
- Sampling and testing process for plant and system operations, and process steam supply monitoring - purpose, standards and procedures as per site agreements
- Boiler water treatment system and reasons for treatment
- Operation of plant and systems
- Application of high risk equipment as required
- Sensory information that indicates a deviation from standard operating parameters
- Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control boiler operation, within level of responsibility

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence should be relevant to the work. It should satisfy the requirements of the elements and performance criteria and include consideration of: • the required knowledge and skills tailored to the needs of the specific workplace • applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements • applicable aspects of the range statement • practical workplace demonstration of skills in monitoring and controlling boiler operation
Context of and specific resources for assessment	A workplace assessment must be used to assess: • the application of required knowledge on the job • the application of skills on the job, over time and under a range of typical conditions that may be experienced in steam generation operations Access to the full range of equipment involved in integrated continuous manufacturing of steam generation operations in a pulp or paper mill is required
Method of assessment	A combination of assessment methods should be used. The following examples are appropriate for this unit: • observation of applied skills and knowledge on the job • workplace demonstrations via a mock-up or simulation that replicate part/s of the job • answers to written or verbal questions about specific skills and knowledge • third-party reports from relevant and skilled personnel • written evidence e.g. log sheet entries, checklist entries, test results Assessment processes and techniques must be culturally appropriate and in keeping with the language

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EVIDENCE GUIDE

and literacy capacity of the learner and the work being performed. This includes conducting an assessment in a manner that allows thoughts to be conveyed verbally so that the learner can both understand and be understood by the assessor (e.g. use plain English and terminology used on the job)

A holistic assessment with other units relevant to the pulp and paper industry, mill and job role is recommended

Additional information on approaches to assessment for the pulp and paper industry is provided in the Assessment Guidelines for this Training Package

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Productivity requirements may include:

- energy efficiency
- waste minimisation
- evaporation minimisation, including landfill and waste water reduction
- environmentally safe waste disposal
- consideration of resource utilisation, including fibre efficiency
- minimising delays
- chemical recovery maximisation
- meeting key performance indicators
- line speed
- handovers
- quality checks
- meeting output targets i.e. net tonnes per employee per annum
- machine/process time availability i.e. time the machine or process is making product

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RANGE STATEMENT

	• machine/process production rate
Boiler types may include:	• fire tube • water tube
	and may be operated in conjunction with other steam driven plant and operations including: • paper making machines • turbines • digesters • evaporators • heating plant
Pre-operational checks may include:	• low water level alarm • high water level alarm • low water level alarm lockout • hydrostatic test • burner management system • safety valve test
Materials and supplies may include:	• chemicals • coal • oil • gas • additives • air • water • wood waste • steam • recovery process products • power
Equipment may include:	• boiler and auxiliary plant • boiler heating systems • steam distribution system • fuel and fuel delivery system plant • dust removal and combustion waste • fuel management system • extraction systems • water distribution systems • compressed air systems • steam temperature control plant • chemical dosing system • water treatment system

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RANGE STATEMENT

	• flame detection equipment • hand and power tools • computer systems • electronic screens and alarms • process control systems • analogue and digital instrumentation • fully automated, semi-automated, manually operated plant and equipment appropriate to steam generation operations
Electronic control systems may include:	• Digital Control System (DCS) • touch screens • robotics
Legislation, regulatory, licensing and certification requirements may include:	• OHS and environmental requirements (local, state and commonwealth) • as applicable, activity or task specific high risk licensing requirements • appropriate boiler/pressure vessel operator certification • confined space standards and regulations
Documentation, procedures and reports may include:	• SOP • quality procedures • environmental sustainability requirements/practices • plant manufacturing operating manuals • oil or chemical spills and disposal guidelines • plant isolation documentation • safe work documentation e.g. plant clearance, job safety analysis, permit systems • enterprise policies and procedures • job sheets • manufacturer's specifications • maintenance documentation • statutory requirements • Materials Safety Data Sheets (MSDS) • operator's log • process and instrument diagrams
Maintenance may include:	• operator level as per site agreements • operator schedules • systems • suppliers • proactive strategies e.g. Total Productive

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RANGE STATEMENT

	Maintenance (TPM), Reliability Centred Maintenance (RCM)
Actions may include:	• process adjustments • reporting to authorised person • rectifying problem within level of responsibility
Communications may include	interaction with: • internal/external customers and suppliers • team members • production/service coordinators • maintenance services • operational management • statutory authorities
Situational awareness may include	awareness of: • traffic • pedestrians • location of equipment • product • hazards • obstruction • unexpected movement
Forms of communication may include:	• written e.g. log books, emails, incident and other reports, run sheets, data entry • • reading and interpreting documentation e.g. SOP, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover • non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access
Sensory information may include:	• visual • sound • feel • touch • smell • vibration • temperature

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Unit Sector(s)

Not Applicable

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FPPSTM320A Manage steam boiler startup

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit describes the outcomes required to manage steam boiler startup in the pulp and paper industry

General legislation, regulatory, licensing and certification requirements applicable to this unit are detailed in the range statement

Specific high risk licensing requirements for this unit may be applicable and are to be met separately and prior to the achievement of this unit

Application of the Unit

Application of the unit

This unit applies to operators who manage steam boiler startup in the pulp and paper industry. This work typically involves complex integrated equipment and continuous operations

This unit generally applies to those who:

- conduct pre-operational safety checks and
- conduct startup procedures

to meet safety, quality and productivity requirements

It does not include monitoring and controlling boiler operation, shutting down and banking steam boiler or troubleshooting and rectifying boiler plant systems

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Not Applicable

Employability Skills Information

Employability skills This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Conduct pre-operational safety checks	1.1. Pre-operational safety checks are conducted within Occupational Health and Safety (OHS) regulations, environmental and safe working requirements/practices, Standard Operating Procedures (SOP), and housekeeping requirements
	1.2. Plant status is confirmed by inspection, observations and other information
	1.3. Potential work area hazards are identified, reported and prevention or control measures implemented
	1.4. Work and output requirements are established
	1.5. Pre-operational and safety checks are conducted
	1.6. Isolations are removed
	1.7. Availability of process supplies are confirmed
2. Conduct startup procedures	2.1. Startup procedures are conducted within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements
	2.2. Pre-light conditions are established
	2.3. Boiler condition during startup is monitored to detect abnormal conditions
	2.4. Boiler is started and brought on-line
	2.5. System and plant is observed for correct operational response
	2.6. Deviations from required operating conditions are detected and corrective action undertaken to rectify
	2.7. Responses to corrective actions are documented as required
	2.8. Startup information is recorded and reported as required

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This describes the skills and knowledge required for this unit.

Required skills

- Uses required forms of communication in managing a steam boiler startup
- Reads and interprets required documentation, procedures and reports
- Interprets instruments, gauges and data recording equipment
- Prepares written information and enters data to support groups and teams
- Interprets specifications and customer orders
- Accesses, navigates and enters computer-based information
- Identifies and actions problems within level of responsibility
- Identifies and monitors process control points
- Maintains situational awareness in the work area
- Implements isolation and access procedures
- Maintains a clean and hazard free work area
- Sets up and starts boiler within an appropriate time
- Uses measuring equipment as required
- Operates high risk equipment as required
- Analyses and uses sensory information to adjust process to maintain and co-ordinate safety, quality and productivity
- Uses electronic and other control systems to control equipment and processes as required

Required knowledge

- Procedures, regulations and legislative requirements relevant to steam generation operations including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping
- Relevant forms of communication
- Basic problem-solving techniques consistent with level of responsibility
- Working knowledge of steam generation plant, processes, layout and associated services sufficient to carry out startup activities within level of responsibility
- Boiler water treatment system and reasons for treatment
- Pre-operational checks and requirements
- Application of high risk equipment as required
- Sensory information that indicates a deviation from standard operating parameters
- Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control steam generation systems, within level of responsibility

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence should be relevant to the work. It should satisfy the requirements of the elements and performance criteria and include consideration of: • the required knowledge and skills tailored to the needs of the specific workplace • applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements • applicable aspects of the range statement • practical workplace demonstration of skills in managing a steam boiler startup
Context of and specific resources for assessment	A workplace assessment must be used to assess: • the application of required knowledge on the job • the application of skills on the job, over time and under a range of typical conditions that may be experienced in steam generation operations Access to the full range of equipment involved in integrated continuous manufacturing of steam generation operations in a pulp or paper mill is required
Method of assessment	A combination of assessment methods should be used. The following examples are appropriate for this unit: • observation of applied skills and knowledge on the job • workplace demonstrations via a mock-up or simulation that replicate part/s of the job • answers to written or verbal questions about specific skills and knowledge • third-party reports from relevant and skilled personnel • written evidence e.g. log sheet entries, checklist entries, test results Assessment processes and techniques must be culturally appropriate and in keeping with the language

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EVIDENCE GUIDE

and literacy capacity of the learner and the work being performed. This includes conducting an assessment in a manner that allows thoughts to be conveyed verbally so that the learner can both understand and be understood by the assessor (e.g. use plain English and terminology used on the job)

A holistic assessment with other units relevant to the pulp and paper industry, mill and job role is recommended

Additional information on approaches to assessment for the pulp and paper industry is provided in the Assessment Guidelines for this Training Package

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Productivity requirements may include:

- energy efficiency
- waste minimisation
- evaporation minimisation, including landfill and waste water reduction
- environmentally safe waste disposal
- consideration of resource utilisation, including fibre efficiency
- minimising delays
- chemical recovery maximisation
- meeting key performance indicators
- line speed
- handovers
- quality checks
- meeting output targets i.e. net tonnes per employee per annum
- machine/process time availability i.e. time the machine or process is making product

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RANGE STATEMENT

	• machine/process production rate
Boiler types may include:	• fire tube • water tube
	and may be operated in conjunction with other steam driven plant and operations including: • paper making machines • turbines • digesters • evaporators • heating plant
Pre-operational checks may include:	• low water level alarm • high water level alarm • low water level alarm lockout • hydrostatic test • burner management system • safety valve test
Materials and supplies may include:	• chemicals • coal • oil • gas • additives • air • water • wood waste • steam • recovery process products • power
Equipment may include:	• boiler and auxiliary plant • boiler heating systems • steam distribution system • fuel and fuel delivery system plant • dust removal and combustion waste • fuel management system • extraction systems • water distribution systems • compressed air systems • steam temperature control plant • chemical dosing system • water treatment system

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RANGE STATEMENT

	• flame detection equipment • hand and power tools • computer systems • electronic screens and alarms • process control systems • analogue and digital instrumentation • fully automated, semi-automated, manually operated plant and equipment appropriate to steam generation operations
Electronic control systems may include:	• Digital Control System (DCS) • touch screens • robotics
Legislation, regulatory, licensing and certification requirements may include:	• OHS and environmental requirements (local, state and commonwealth) • activity or task specific high risk licensing requirements • appropriate boiler/pressure vessel operator certification • confined space standards and regulations
Documentation, procedures and reports may include:	• SOP • quality procedures • environmental sustainability requirements/practices • plant manufacturing operating manuals • oil or chemical spills and disposal guidelines • plant isolation documentation • safe work documentation e.g. plant clearance, job safety analysis, permit systems • enterprise policies and procedures • job sheets • manufacturer's specifications • maintenance documentation • statutory requirements • Materials Safety Data Sheets (MSDS) • operator's log • process and instrument diagrams
Maintenance may include:	• operator level maintenance as per site agreements • operator maintenance schedules • maintenance systems • maintenance suppliers

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RANGE STATEMENT

	• proactive maintenance strategies e.g. Total Productive Maintenance (TPM), Reliability Centred Maintenance (RCM)
Actions may include:	• process adjustments • reporting to authorised person • rectifying problem within level of responsibility
Communications may include	interaction with: • internal/external customers and suppliers • team members • production/service coordinators • maintenance services • operational management • statutory authorities
Situational awareness may include	awareness of: • traffic • pedestrians • location of equipment • product • hazards • obstruction • unexpected movement
Forms of communication may include:	• written e.g. log books, emails, incident and other reports, run sheets, data entry • reading and interpreting documentation e.g. SOP, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover • non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access
Sensory information may include:	• visual • sound • feel • touch • smell • vibration • temperature

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Unit Sector(s)

Not Applicable

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FPPSTM330A Shut down and bank steam boiler

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor

This unit describes the outcomes required to shut down and bank steam boiler/s in the pulp and paper industry

General legislation, regulatory, licensing and certification requirements applicable to this unit are detailed in the range statement

Specific high risk licensing requirements for this unit may be applicable and are to be met separately and prior to the achievement of this unit

Application of the Unit

Application of the unit

This unit applies to operators who shut down and bank steam boiler/s in the pulp and paper industry. This work typically involves complex integrated equipment and continuous operations

This unit generally applies to those who:

- prepare boiler for shutdown
- conduct boiler inspection and maintenance
- store boiler in shutdown mode
- respond to unplanned or emergency shutdowns, and
- record and report shutdown data

to meet safety, quality and productivity requirements

It does not include managing steam boiler startup, monitoring and controlling boiler operation or troubleshooting and rectifying boiler plant systems

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability skills This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare boiler for shutdown	1.1. Boiler is prepared for shutdown within Occupational Health and Safety (OHS) regulations, environmental and safe working requirements/practices, Standard Operating Procedures (SOP), and housekeeping requirements
	1.2. Maintenance requirements are identified and reported
	1.3. Appropriate isolations are initiated
	1.4. Faulty plant is isolated/contained where possible to allow continued production as required
	1.5. Boiler and ancillary plant are shut down
2. Conduct boiler inspection and maintenance	2.1. Boiler inspection and maintenance is conducted within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements
	2.2. Boiler is prepared for inspection
	2.3. Condition of boiler is established to ensure safe removal of equipment
	2.4. Inspections and maintenance is carried out
	2.5. Internal and external cleaning of boiler and fittings are undertaken as required
3. Store boiler in shutdown mode	3.1. Boiler is stored in shutdown mode within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements
	3.2. Storage time and condition of storage are established
	3.3. Boiler is stored in a safe condition for access in accordance with manufacturer's specifications
	3.4. Stored boiler water and chemicals are analysed and handled when boiler is stored for extended periods
4. Respond to unplanned or emergency shutdowns	4.1. Unplanned or emergency shutdowns are responded to within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements
	4.2. Shutdown requirement is responded to immediately

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ELEMENT	PERFORMANCE CRITERIA
	4.3. Emergency conditions are complied with in accordance with legislative and enterprise procedures, where applicable
	4.4. Cause of shutdown is identified and located where possible
	4.5. Immediate safety of personnel and plant is ensured
	4.6. Continuing plant operation is monitored and maintained in safe working conditions and customers are notified
	4.7. Relevant personnel are notified to rectify and make plant ready for restart
5. Record and report shutdown data	5.1. Shutdown data is recorded and reported within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements
	5.2. Shutdown information is recorded, including corrective action as required
	5.3. Shutdown information is reported to relevant personnel as required

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the skills and knowledge required for this unit.

Required skills

- Uses required forms of communication in shutting down and banking steam boiler/s
- Reads and interprets required documentation, procedures and reports within level of responsibility
- Accesses, navigates and enters computer-based information
- Interprets instruments, gauges and data recording equipment
- Interprets specifications and customer orders
- Prepares written information and enters data to support groups and teams
- Identifies and actions problems within level of responsibility
- Identifies and monitors process control points
- Implements boiler bank, standby or store procedures

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REQUIRED SKILLS AND KNOWLEDGE

- Sets up boiler and/or re-starts within appropriate time
- Conducts pre-operational checks
- Identifies and responds appropriately to shutdown causes
- Respond to problems associated with plant shutdown and unplanned shutdown to ensure safety quality and productivity
- Coordinates and plans shutdown activity
- Maintains situational awareness in the work area
- Uses measuring equipment as required
- Operates high risk equipment as required
- Analyses and uses sensory information to adjust process to maintain and co-ordinate safety, quality and productivity
- Uses electronic and other control systems to control equipment and processes as required

Required knowledge

- Procedures, regulations and legislative requirements relevant to steam generation operations including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping
- Relevant forms of communication
- Basic problem-solving techniques consistent with level of responsibility
- Working knowledge of steam generation plant, processes, layout and associated services sufficient to carry out shutdown activities within level of responsibility
- Types, causes and effects of steam boiler shutdowns
- Required responses to all unplanned shutdowns (e.g. power outage, mechanical breakdown, blockages, jamming, air supply, control system failure) to ensure safety quality and productivity
- Process and procedures for plant shutdowns and unplanned shutdowns
- Plant and machinery functions and operations
- Emergency procedures and responses
- Boiler water treatment system and reasons for treatment
- Operation of plant and systems
- Application of high risk equipment as required
- Sensory information that indicates a deviation from standard operating parameters
- Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control boiler plant operations, within level of responsibility

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence should be relevant to the work. It should satisfy the requirements of the elements and performance criteria and include consideration of: • the required knowledge and skills tailored to the needs of the specific workplace • applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements • applicable aspects of the range statement • practical workplace demonstration of skills in the shutting down and banking of steam boilers
Context of and specific resources for assessment	A workplace assessment must be used to assess: • the application of required knowledge on the job • the application of skills on the job, over time and under a range of typical conditions that may be experienced in steam generation operations Access to the full range of equipment involved in integrated continuous manufacturing of steam generation operations in a pulp or paper mill is required
Method of assessment	A combination of assessment methods should be used. The following examples are appropriate for this unit: • observation of applied skills and knowledge on the job • workplace demonstrations via a mock-up or simulation that replicate part/s of the job • answers to written or verbal questions about specific skills and knowledge • third-party reports from relevant and skilled personnel • written evidence e.g. log sheet entries, checklist entries, test results Assessment processes and techniques must be culturally appropriate and in keeping with the language

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EVIDENCE GUIDE

and literacy capacity of the learner and the work being performed. This includes conducting an assessment in a manner that allows thoughts to be conveyed verbally so that the learner can both understand and be understood by the assessor (e.g. use plain English and terminology used on the job)

A holistic assessment with other units relevant to the pulp and paper industry, mill and job role is recommended

Additional information on approaches to assessment for the pulp and paper industry is provided in the Assessment Guidelines for this Training Package

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Productivity requirements may include:

- energy efficiency
- waste minimisation
- evaporation minimisation, including landfill and waste water reduction
- environmentally safe waste disposal
- consideration of resource utilisation, including fibre efficiency
- minimising delays
- chemical recovery maximisation
- meeting key performance indicators
- line speed
- handovers
- quality checks
- meeting output targets i.e. net tonnes per employee per annum
- machine/process time availability i.e. time the machine or process is making product

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RANGE STATEMENT

	• machine/process production rate
Boiler types may include:	• fire tube • water tube
	and may be operated in conjunction with other steam driven plant and operations including: • paper making machines • turbines • digesters • evaporators • heating plant
Pre-operational checks may include:	• low water level alarm • high water level alarm • low water level alarm lockout • hydrostatic test • burner management system • safety valve test
Materials and supplies may include:	• chemicals • coal • oil • gas • additives • air • water • wood waste • steam • recovery process products • power
Equipment may include:	• boiler and auxiliary plant • boiler heating systems • steam distribution system • fuel and fuel delivery system plant • dust removal and combustion waste • fuel management system • extraction systems • water distribution systems • compressed air systems • steam temperature control plant • chemical dosing system • water treatment system

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RANGE STATEMENT

	• flame detection equipment • hand and power tools • computer systems • electronic screens and alarms • process control systems • analogue and digital instrumentation • fully automated, semi-automated, manually operated plant and equipment appropriate to steam generation operations
Electronic control systems may include:	• Digital Control System (DCS) • touch screens • robotics
Legislation, regulatory, licensing and certification requirements may include:	• OHS and environmental requirements (local, state and commonwealth) • activity or task specific high risk licensing requirements • appropriate boiler/pressure vessel operator certification • confined space standards and regulations
Documentation, procedures and reports may include:	• SOP • quality procedures • environmental sustainability requirements/practices • plant manufacturing operating manuals • oil or chemical spills and disposal guidelines • plant isolation documentation • safe work documentation e.g. plant clearance, job safety analysis, permit systems • enterprise policies and procedures • job sheets • manufacturer's specifications • maintenance documentation • statutory requirements • Materials Safety Data Sheets (MSDS) • operator's log • process and instrument diagrams
Maintenance may include:	• operator level maintenance as per site agreements • operator maintenance schedules • maintenance systems • maintenance suppliers

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RANGE STATEMENT

	• proactive maintenance strategies e.g. Total Productive Maintenance (TPM), Reliability Centred Maintenance (RCM)
Actions may include:	• process adjustments • reporting to authorised person • rectifying problem within level of responsibility
Communications may include	interaction with: • internal/external customers and suppliers • team members • production/service coordinators • maintenance services • operational management • statutory authorities
Situational awareness may include	awareness of: • traffic • pedestrians • location of equipment • product • hazards • obstruction • unexpected movement
Forms of communication may include:	• written e.g. log books, emails, incident and other reports, run sheets, data entry • reading and interpreting documentation e.g. SOP, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover • non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access
Sensory information may include:	• visual • sound • feel • touch • smell • vibration • temperature

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Unit Sector(s)

Not Applicable

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FPPSTM440A Troubleshoot and rectify boiler plant systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit describes the outcomes required to troubleshoot and rectify boiler plant systems in the pulp and paper industry

General legislation, regulatory, licensing and certification requirements applicable to this unit are detailed in the range statement

Specific high risk licensing requirements for this unit may be applicable and are to be met separately and prior to the achievement of this unit

Application of the Unit

Application of the unit

This unit applies to persons who troubleshoot and rectify boiler plant systems in the pulp and paper industry. This work typically involves complex integrated equipment and continuous operations

This unit generally applies to those who:

- identify and diagnose causes of faults
- rectify faults, and
- record and report operational data

to meet safety, quality and productivity requirements

It does not include managing steam boiler startup, monitoring and controlling boiler operations or shutting down and banking steam boiler/s

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Not Applicable

Employability Skills Information

Employability skills This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and diagnose causes of faults	1.1. Causes of faults are identified and diagnosed within Occupational Health and Safety (OHS) regulations, environmental and safe working requirements/practices, Standard Operating Procedures (SOP), and housekeeping requirements
	1.2. Abnormal plant conditions and system alarms are interpreted to determine fault type and location
	1.3. Physical inspections of plant and processes are made to identify faults
	1.4. Cause and source of fault is identified and located
	1.5. Faulty plant is isolated, if possible, and confirmed with production and maintenance
	1.6. Diagnosis is confirmed by access and reference to relevant historical data
	1.7. Diagnoses are communicated to relevant personnel
2. Rectify faults	2.1. Faults are rectified within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements
	2.2. Shutdown and isolation procedures are implemented as required
	2.3. Faulty equipment is repaired or replaced
	2.4. Adjustments to process and systems are made to restore normal operations
	2.5. Normal operation is communicated to relevant personnel
3. Record and report operational data	3.1. Operational data is recorded and reported within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements
	3.2. Variations from standard specification and boiler operation faults are documented
	3.3. Troubleshooting process and corrective actions are recorded
	3.4. Relevant information is communicated to appropriate personnel

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the skills and knowledge required for this unit.

Required skills

- Identifies, accesses and interprets relevant historical and operational data and information
- Uses required forms of communication in troubleshooting and rectifying boiler plant systems
- Reads and interprets required documentation, procedures and reports within level of responsibility
- Accesses, navigates and enters computer-based information
- Interprets instruments, gauges and data recording equipment
- Communicates effectively with personnel to assist with analysis and resolution of operational problems
- Assists others to identify and resolve operational problems in the workplace
- Identifies and actions systems, quality and equipment faults within level of responsibility
- Identifies causes and effects of faults and corrective action on associated processes
- Identifies and responds to causes of shutdowns
- Determines quality faults, effects and causes
- Selects and uses appropriate troubleshooting methods
- Uses troubleshooting guides and processes
- Takes timely corrective action to maximise safety, quality and productivity
- Undertakes necessary calculations to aid troubleshooting as required
- Identifies and monitors process control points
- Maintains situational awareness in the work area
- Perform tests and interpret and record results as required
- Confirms and maintains required production throughput after restart
- Initiates isolations in accordance with SOP
- Conducts routine checking procedures during plant and systems operation
- Maintains plant operation within specification
- Uses measuring equipment as required
- Operates high risk equipment as required
- Analyses and uses sensory information to adjust process to maximise safety, quality and productivity
- Uses electronic and other control systems to control equipment and processes as required

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge

- Procedures, regulations and legislative requirements relevant to steam generation operations including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping
- Relevant forms of communication
- Detailed knowledge of steam generation system, processes and associated services sufficient to troubleshoot including:
  - plant layout
  - theory of operation
  - causes and effects of adjustments made to steam generation plant and processes
  - relationships between steam generation system, processes and associated services
- An appropriate range of troubleshooting methods
- Types, causes and effects of plant shutdowns
- Impact and effect of inappropriate responses to shutdown
- Plant startup and shutdown procedures
- Plant operation and control mechanisms
- Boiler water treatment system and reasons for treatment
- Application of high risk equipment as required
- Sensory information that indicates a deviation from standard operating parameters
- Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control boiler plant operations, within level of responsibility

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence should be relevant to the work. It should satisfy the requirements of the elements and performance criteria and include consideration of: • the required knowledge and skills tailored to the needs of the specific workplace

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EVIDENCE GUIDE

- applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements
- applicable aspects of the range statement
- practical workplace demonstration of skills in troubleshooting and rectifying boiler plant systems

Context of and specific resources for assessment

A workplace assessment must be used to assess:

- the application of required knowledge on the job
- the application of skills on the job, over time and under a range of typical conditions that may be experienced in steam generation operations

Access to the full range of equipment involved in integrated continuous manufacturing of steam generation operations in a pulp or paper mill is required

Method of assessment

A combination of assessment methods should be used. The following examples are appropriate for this unit:

- observation of applied skills and knowledge on the job
- workplace demonstrations via a mock-up or simulation that replicate part/s of the job
- answers to written or verbal questions about specific skills and knowledge
- third-party reports from relevant and skilled personnel
- written evidence e.g. log sheet entries, checklist entries, test results

Assessment processes and techniques must be culturally appropriate and in keeping with the language and literacy capacity of the learner and the work being performed. This includes conducting an assessment in a manner that allows thoughts to be conveyed verbally so that the learner can both understand and be understood by the assessor (e.g. use plain English and terminology used on the job)

A holistic assessment with other units relevant to the pulp and paper industry, mill and job role is recommended

Additional information on approaches to assessment for the pulp and paper industry is provided in the Assessment Guidelines for this Training Package

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Productivity requirements may include:

- energy efficiency
- waste minimisation
- evaporation minimisation, including landfill and waste water reduction
- environmentally safe waste disposal
- consideration of resource utilisation, including fibre efficiency
- minimising delays
- chemical recovery maximisation
- meeting key performance indicators
- line speed
- handovers
- quality checks
- meeting output targets i.e. net tonnes per employee per annum
- machine/process time availability i.e. time the machine or process is making product
- machine/process production rate

Boiler types may include:

- fire tube
- water tube

and may be operated in conjunction with other steam driven plant and operations including:

- paper making machines
- turbines
- digesters
- evaporators
- heating plant

Pre-operational checks may include:

- low water level alarm
- high water level alarm
- low water level alarm lockout

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RANGE STATEMENT

	• hydrostatic test • burner management system • safety valve test
Materials and supplies may include:	• chemicals • coal • oil • gas • additives • air • water • wood waste • steam • recovery process products • power
Equipment may include:	• boiler and auxiliary plant • boiler heating systems • steam distribution system • fuel and fuel delivery system plant • dust removal and combustion waste • fuel management system • extraction systems • water distribution systems • compressed air systems • steam temperature control plant • chemical dosing system • water treatment system • flame detection equipment • hand and power tools • computer systems • electronic screens and alarms • process control systems • analogue and digital instrumentation • fully automated, semi-automated, manually operated plant and equipment appropriate to steam generation operations
Electronic control systems may include:	• Digital Control System (DCS) • touch screens • robotics
Legislation, regulatory, licensing and certification requirements	• OHS and environmental requirements (local, state and commonwealth)

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RANGE STATEMENT

may include:	• activity or task specific high risk licensing requirements • appropriate boiler/pressure vessel operator certification • confined space standards and regulations
Documentation, procedures and reports may include:	• SOP • quality procedures • environmental sustainability requirements/practices • plant manufacturing operating manuals • oil or chemical spills and disposal guidelines • plant isolation documentation • safe work documentation e.g. plant clearance, job safety analysis, permit systems • enterprise policies and procedures • job sheets • manufacturer's specifications • maintenance documentation • statutory requirements • Materials Safety Data Sheets (MSDS) • operator's log • process and instrument diagrams
Maintenance may include:	• operator level maintenance as per site agreements • operator maintenance schedules • maintenance systems • maintenance suppliers • proactive maintenance strategies e.g. Total Productive Maintenance (TPM), Reliability Centred Maintenance (RCM)
Actions may include:	• process adjustments • reporting to authorised person • rectifying problem within level of responsibility
Communications may include	interaction with: • internal/external customers and suppliers • team members • production/service coordinators • maintenance services • operational management • statutory authorities

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RANGE STATEMENT

Situational awareness may include	awareness of: • traffic • pedestrians • location of equipment • product • hazards • obstruction • unexpected movement
Forms of communication may include:	• written e.g. log books, emails, incident and other reports, run sheets, data entry • reading and interpreting documentation e.g. SOP, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover • non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access
Sensory information may include:	• visual • sound • feel • touch • smell • vibration • temperature

Unit Sector(s)

Not Applicable

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HLTFA301C Apply first aid

Modification History

Not Applicable

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Unit Descriptor

Descriptor

This unit of competency describes the skills and knowledge required to provide first aid response, life support, management of casualty(s), the incident and other first aiders, until the arrival of medical or other assistance

Application of the Unit

Application

These skills and knowledge may be applied in a range of situations, including community and workplace settings

Training Package users should ensure implementation is consistent with any specific workplace and/or relevant legislative requirements in relation to first aid, including State/Territory requirements for currency

Application of these skills and knowledge should be contextualised as required to address specific industry, enterprise or workplace requirements and to address specific risks and hazards and associated injuries

A current Senior First Aid, Workplace Level 2 or Level 2 qualification may provide evidence of skills and knowledge required by this competency unit. However, as with all evidence of competence, evidence must be assessed against the requirements specified in the competency unit

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills This unit contains Employability Skills

Elements and Performance Criteria Pre-Content

Elements define the essential outcomes of a unit of competency.

The Performance Criteria specify the level of performance required to demonstrate achievement of the Element. Terms in italics are elaborated in the Range Statement.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess the situation	1.1 Identify assess and minimise *hazards* in the situation that may pose a risk of injury or illness to self and others
	1.2 Minimise immediate *risk* to self and casualty's health and safety by controlling any hazard in accordance with occupational health and safety requirements
	1.3 Assess casualty and identify injuries, illnesses and conditions

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ELEMENT	PERFORMANCE CRITERIA
2. Apply first aid procedures	2.1 Calmly provide information to reassure casualty, adopting a communication style to match the casualty's level of consciousness
	2.2 Use available *resources and equipment* to make the casualty as comfortable as possible
	2.3 Respond to the casualty in a culturally aware, sensitive and respectful manner
	2.4 Determine and explain the nature of casualty's injury/condition and relevant first aid procedures to provide comfort
	2.5 Seek consent from casualty prior to applying first aid management
	2.6 Provide *first aid management* in accordance with *established first aid principles* and Australian Resuscitation Council (ARC) Guidelines and/or State/Territory regulations, legislation and policies and industry requirements
	2.7 Seek first aid assistance from others in a timely manner and as appropriate
	2.8 Correctly operate first aid equipment as required for first aid management according to manufacturer/supplier's instructions and local policies and/or procedures
	2.9 Use safe manual handling techniques as required
	2.10 Monitor *casualty's condition* and respond in accordance with effective first aid principles and procedures
	2.11 Finalise casualty management according to casualty's needs and first aid principles

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ELEMENT	PERFORMANCE CRITERIA
3. Communicate details of the incident	3.1 Request ambulance support and/or appropriate medical assistance according to relevant circumstances using relevant *communication media and equipment* 3.2 Accurately convey assessment of casualty's condition and management activities to ambulance services /other emergency services/relieving personnel 3.3 Prepare reports as appropriate in a timely manner, presenting all relevant facts according to established procedures 3.4 Accurately record details of casualty's physical condition, changes in conditions, management and response to management in line with established procedures 3.5 Maintain confidentiality of records and information in line with privacy principles and statutory and/or organisation policies
4. Evaluate own performance	4.1 Seek feedback from *appropriate clinical expert* 4.2 Recognise the possible psychological impacts on rescuers of involvement in critical incidents 4.3 Participate in debriefing/evaluation as appropriate to improve future response and address individual needs

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level required for this unit.

Essential knowledge:

The candidate must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes knowledge of:

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REQUIRED SKILLS AND KNOWLEDGE

- ARC Guidelines relating to provision of first aid as outlined
- Awareness of stress management techniques and available support
- First aid management of:
  - abdominal injuries
  - allergic reactions
  - altered and loss of consciousness
  - bleeding
  - burns - thermal, chemical, friction, electrical
  - cardiac arrest
  - casualty with no signs of life
  - chest pain
  - choking/airway obstruction
  - injuries: cold and crush injuries; eye and ear injuries; head, neck and spinal injuries; minor skin injuries; needle stick injuries; soft tissue injuries including sprains, strains, dislocations
  - envenomation - snake, spider, insect and marine bites
  - environmental impact such as hypothermia, hyperthermia, dehydration, heat stroke
  - fractures
  - medical conditions, including cardiac conditions, epilepsy, diabetes, asthma and other respiratory conditions
  - near drowning
  - poisoning and toxic substances (including chemical contamination)
  - respiratory distress
  - seizures
  - shock
  - stroke
  - substance misuse - common drugs and alcohol, including illicit drugs
- Social/legal issues:
  - duty of care
  - need to be culturally aware, sensitive and respectful
  - importance of debriefing
  - confidentiality
  - own skills and limitations
- Understanding of the use of an Automated External Defibrillator (AED), including when to use and when not to

continued ...

Essential knowledge (*contd*):

- Working knowledge of:

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REQUIRED SKILLS AND KNOWLEDGE

- basic occupational health and safety requirements in the provision of first aid
- basic principles and concepts underlying the practice of first aid
- chain of survival
- first aiders' skills and limitations
- infection control principles and procedures, including use of standard precautions
- priorities of management in first aid when dealing with life threatening conditions
- procedures for dealing with major and minor injury and illness

Essential skills:

It is critical that the candidate demonstrate the ability to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes the ability to:

- Administer medication in line with state/territory regulations, legislation and policies
- Apply first aid principles
- Call an ambulance and/or medical assistance according to relevant circumstances and report casualty's condition
- Communicate effectively and assertively in an incident
- Conduct an initial casualty assessment
- Demonstrate correct procedures for performing CPR using a manikin, including standard precautions (i.e. as per unit *HLTCPR201A Perform CPR*)
- Demonstrate:
  - ability to call an ambulance
  - consideration of the welfare of the casualty
  - safe manual handling
  - site management to prevent further injury
- Evaluate own response and identify appropriate improvements where required
- Follow OH&S guidelines
- Infection control, including use of standard precautions
- Make prompt and appropriate decisions relating to managing an incident in the workplace
- Plan an appropriate first aid response in line with established first aid principles, policies and procedures, ARC Guidelines and/or State/Territory regulations, legislation and policies and industry requirements and respond appropriately to contingencies in line with own skills
- Prepare a written incident report or provide information to enable preparation of an incident report
- Provide assistance with self-medication as per subject's own medication regime and in line with State/Territory legislation, regulations and policies and any available

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REQUIRED SKILLS AND KNOWLEDGE

medical/pharmaceutical instructions

- Use literacy and numeracy skills as required to read, interpret and apply guidelines and protocols

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package. The evidence guide supplements assessment requirements that apply to all units in this Training Package. Users of this evidence guide should first read the package's assessment guidelines.

Critical aspects of assessment:	• The individual being assessed must provide evidence of specified essential knowledge as well as skills • Competence should be demonstrated working individually and, where appropriate, as part of a first aid team • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace or community setting • Currency of first aid knowledge and skills is to be demonstrated in line with State/Territory regulations, legislation and policies, ARC and industry guidelines
Context and resources required for assessment:	• Skills in performing first aid procedures are to be assessed through demonstration, with questioning to confirm essential knowledge • For assessment purposes, demonstration of skills in CPR procedures requires using a model of the human body (resuscitation manikin) in line with Australian Resuscitation Council Guidelines

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EVIDENCE GUIDE

Access and equity considerations:

- All workers in the health industry should be aware of access and equity issues in relation to their own area of work
- All workers should develop their ability to work in a culturally diverse environment
- In recognition of particular health issues facing Aboriginal and Torres Strait Islander communities, workers should be aware of cultural, historical and current issues impacting on health of Aboriginal and Torres Strait Islander people
- Assessors and trainers must take into account relevant access and equity issues, in particular relating to factors impacting on health of Aboriginal and/or Torres Strait Islander clients and communities

Related units:

This unit incorporates the content of units:

- HLTCPR201B Perform CPR
- HLTFA201B Provide basic emergency life support

Range Statement

RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

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RANGE STATEMENT

Contextualisation to address specific requirements may include:	• Focus on first aid management of specific types of injury • First aid provision under specific constraints or circumstances (e.g. in confined spaces, in maritime work environment or in work environment involving identified risks/hazards)
Established first aid principles include:	• Preserve life • Prevent illness, injury and condition(s) becoming worse • Promote recovery • Protect the unconscious casualty
Vital signs include:	• Consciousness • Breathing • Circulation
A hazard is:	• A source or situation with the potential for harm in terms of human injury or ill-health, damage to property, the environment, or a combination of these
Hazards may include:	• Physical hazards • Biological hazards • Chemical hazards • Hazards associated with manual handling
Risks may include:	• Risks from equipment, machinery and substances • Risks from first aid equipment • Environmental risks • Exposure to blood and other body substances • Risk of further injury to the casualty • Risks associated with the proximity of other workers and bystanders • Risks from vehicles

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RANGE STATEMENT

Casualty's condition is managed for:

- Abdominal injuries
- Airway obstruction
- Allergic reactions
- Altered and loss of consciousness
- Bleeding
- Burns - thermal, chemical, friction, electrical
- Chest pain/cardiac arrest
- Injuries: cold and crush injuries; eye and ear injuries; head, neck and spinal injuries; minor skin injuries; needle stick injuries; soft tissue injuries including sprains, strains, dislocations
- Near drowning
- Envenomation - snake, spider, insect and marine bites
- Environmental conditions such as hypothermia, hyperthermia, dehydration, heat stroke
- Fractures
- Medical conditions, including cardiac conditions, epilepsy, diabetes, asthma and other respiratory conditions
- No signs of life
- Poisoning and toxic substances (including chemical contamination)
- Respiratory distress/arrest
- Seizures
- Shock
- Stroke
- Substance misuse - common drugs and alcohol, including illicit drugs.

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RANGE STATEMENT

First aid management must take into account applicable aspects of:	• The setting in which first aid is provided, including:
	  • workplace policies and procedures
	  • industry/site specific regulations, codes etc.
	  • OHS requirements
	  • state and territory workplace health and safety legislative requirements
	  • location and nature of the incident
	  • situational risks associated with, for example, electrical and biological hazards, weather, motor vehicle accidents
	  • location of emergency services personnel.
	• The use and availability of first aid equipment and resources
	• Infection control
	• Legal and social responsibilities of first aider

Resources and equipment are used appropriate to the risk to be met and may include:	• AED • First aid kit • Auto-injector • Puffer/inhaler • Resuscitation mask or barrier • Spacer device
Communication media and equipment may include but are not limited to:	• Telephones, including landline, mobile and satellite phones • HF/VHF radio • Flags • Flares • Two way radio • Email • Electronic equipment • Hand signals
Appropriate clinical expert may include:	• Supervisor/manager • Ambulance officer/paramedic • Other medical/health worker

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RANGE STATEMENT

Documentation may include:

- Injury report forms
- Workplace documents as per organisation requirements

Documentation may include recording:

- Time
- Location
- Description of injury
- First aid management
- Fluid intake/output, including fluid loss via:
  - blood
  - vomit
  - faeces
  - urine
- Administration of medication including:
  - time
  - date
  - person administering
  - dose
- Vital signs

Unit Sector(s)

Not Applicable

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HLTFA402C Apply advanced first aid

Modification History

Not Applicable

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Unit Descriptor

Descriptor

This unit deals with the provision of advanced first aid response, life support, management of casualty(s), the incident and other first aiders, until the arrival of medical or other assistance, and provision of support to other providers

This unit builds on HLTFA301B: Apply first aid to include additional skills and use of a range of equipment

Application of the Unit

Application

Training Package users should ensure implementation is consistent with any specific workplace and/or relevant legislative requirements in relation to first aid, including State/Territory requirements for currency

Application of these skills and knowledge should be contextualised as required to address specific industry, enterprise or workplace requirements and to address specific risks and hazards and associated injuries

This unit includes coverage of skills and knowledge in advanced resuscitation techniques
Competency outcomes in advanced resuscitation are to be equivalent to unit:

- HLTFA404B Apply advanced resuscitation techniques

To achieve equivalence of outcome, providers assessing HLTFA402C may refer to specific detail included in unit HLTFA404B and may choose to award both units

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Pre-requisite units

This unit must be assessed after successful achievement of pre-requisite:

- HLTFA301B Apply first aid

Employability Skills Information

Employability Skills

This unit contains Employability Skills

Elements and Performance Criteria Pre-Content

Elements define the essential outcomes of a unit of competency.

The Performance Criteria specify the level of performance required to demonstrate achievement of the Element. Terms in italics are elaborated in the Range Statement.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess the situation	1.1 Identify, assess and minimise *hazards* that may pose a risk of injury or illness to self and others
	1.2 Assess *risks* to first aider and others and determine appropriate response to ensure prompt control of situation
	1.3 Ascertain and prioritise need(s) for emergency services/medical assistance and undertake triage where required
	1.4 Deploy *resources* to appropriate locations as required in line with workplace procedures

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ELEMENT	PERFORMANCE CRITERIA
2. Manage the casualty(s)	2.1 Determine and explain the nature of *casualty's injury/condition* and relevant first aid procedures to provide comfort
	2.2 Respond to the casualty in a culturally aware, sensitive and respectful manner
	2.3 Seek consent for *management* of the casualty's injury/illness from person(s) where relevant
	2.4 Determine and implement welfare procedure according to casualty(s) needs
	2.5 Control effects of injury and determine and apply appropriate *first aid management* to meet the needs of the casualty and situation
	2.6 Assist with *self-medication* in accordance with State/Territory regulations, legislation and policies and manufacturer's/supplier's instructions and subject to casualty's regime
	2.7 Monitor *casualty's condition* and respond in a timely manner in accordance with effective first aid principles
	2.8 Correctly operate basic life support *equipment* where appropriate according to relevant legislation and manufacturer's/supplier's instructions
	2.9 Apply safety procedures for operation of pressurised gases
	2.10 Use safe manual handling techniques
	2.11 Finalise *management* according to casualty's needs and first aid principles

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ELEMENT	PERFORMANCE CRITERIA
3. Coordinate first aid activities until arrival of medical assistance	3.1 Identify available *resources* required and establish communication links with appropriate personnel, emergency management services and medical assistance as appropriate 3.2 Deploy correct amount of *resources* to appropriate locations in an effective manner to ensure timely arrival of required resources 3.3 Document the provision of resources and recommend modifications as required 3.4 Monitor the condition of casualties in accordance with first aid principles and workplace procedures 3.5 Coordinate evacuation of casualties according to relevant evacuation procedures 3.6 Arrange support services for personnel involved in the incident in accordance with relevant principles and procedures
4. Communicate essential incident details	4.1 Maintain communication with relevant personnel using appropriate media and equipment 4.2 Communicate first aid information with other providers/carers as appropriate to meet their needs and in accordance with workplace procedures 4.3 Calmly provide information to reassure casualty, adopting a communication style to match the casualty's level of consciousness 4.4 Prepare an incident report in line with organisation requirements 4.5 Maintain confidentiality of records and information in line with privacy principles and statutory and/or organisation policies

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ELEMENT	PERFORMANCE CRITERIA
5. Evaluate the incident	5.1 Evaluate management of the incident and where required develop an action plan in consultation with relevant parties 5.2 Participate in debriefing/evaluation in order to improve future operations and address individual's needs 5.3 Formulate and review contingency planning to identify and select alternative management principles and procedures as required

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level required for this unit.

Essential knowledge:

The candidate must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes knowledge of:

- Working knowledge of:
  - legal responsibilities and duty of care, including confidentiality
  - basic anatomy (skeleton, muscles, joints, bones), physiology and toxicology
  - ARC Guidelines and/or State/Territory regulations, legislation and policies relating to provision of first aid
  - procedures for dealing with major and minor accidents in the workplace
  - infection control principles and procedures, including using standard precautions
  - how to gain access to and interpret material safety data sheets (MSDSs)
  - company/organisation standard operating procedures (SOPs)
  - priorities of management in first aid
  - occupational health and safety requirements in the provision of first aid.
  - capabilities of emergency management services
  - first aiders' skills and limitations
  - safe storage and handling procedures for pressurised gases

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REQUIRED SKILLS AND KNOWLEDGE

- advanced resuscitation techniques as per *HLTFA404A Apply advanced resuscitation techniques*
- First aid management procedures in accordance with ARC Guidelines, state/territory regulations, legislation and policies and organisation requirements for conditions identified in the Range Statement and including:
  - use of AED, oxygen, bronchodilator
  - spinal care
  - management of anaphylactic shock reaction
  - use of analgesic gases
- Incident management procedures:
  - manual handling, hazardous substances, dangerous goods or chemicals
  - basic triage for a multiple casualty incident
  - safe access to the casualty
  - awareness of confined spaces and dangerous places
  - removal of casualty to safe area, if appropriate
  - coordinate activities of other first aiders, if applicable
- First aid management procedures may also relate to emergency childbirth
- Complications and associated methods of management for conditions identified in the Range Statement
- State and territory regulatory requirements relating to currency of skill and knowledge

continued ...

Essential knowledge (*contd*):

- Social issues, especially in particular workplace or community context(s) in which first aid is to be applied, including:
  - importance of debriefing
  - need to be culturally aware, sensitive and respectful
  - confidentiality
  - own skills and limitations
- Awareness of stress management techniques and available support
- Safety procedures for the operation of pressurised gases

Essential skills:

It is critical that the candidate demonstrate the ability to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes the ability to:

- Administer medication in line with State/Territory regulations, legislation and policies

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REQUIRED SKILLS AND KNOWLEDGE

and any available medical/pharmaceutical instructions

- Apply advanced resuscitation techniques as per *HLTFA404A Apply advanced resuscitation techniques*
- Call an ambulance and/or medical assistance according to relevant circumstances and report casualty's condition
- Communicate effectively and assertively and show leadership in an incident
- Comply with OHS legislation
- Conduct an initial casualty assessment
- Demonstrate the application of first aid principles
- Demonstrate:
  - adequate infection control procedures
  - consideration of the welfare of the casualty
  - safe manual handling
  - safe storage and handling procedures for pressurised gases
- Interpret and use listed documents
- Make prompt and appropriate decisions relating to managing an incident in the workplace
- Manage specific injuries/illnesses and conditions as identified in the Range Statement for this competency unit
- Plan an appropriate first aid response in line with established first aid principles, policies and procedures, ARC Guidelines and/or State/Territory regulations, legislation and policies and industry requirements and respond appropriately to contingencies in line with own skills
- Prepare a written incident report or provide information to enable preparation of an incident report
- Provide assistance with self-medication as per subject's own medication regime and in line with State/Territory legislation, regulations and policies and any available medical/pharmaceutical instructions
- Use a range of first aid equipment as outlined in the Range Statement
- Use literacy and numeracy skills as required to read, interpret and apply guidelines and protocols

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

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EVIDENCE GUIDE

Critical aspects of assessment:

- The individual being assessed must provide evidence of specified essential knowledge as well as skills
- Competence should be demonstrated working individually and, where appropriate, as part of a first aid team
- Consistency of performance should be demonstrated over the required range of situations relevant to the workplace or community setting
- Currency of first aid knowledge and skills is to be demonstrated in line with state/territory regulations, legislation and policies, ARC and industry guidelines

Method of assessment may include:

- Skills in performing first aid procedures are to be assessed through demonstration, with questioning to confirm essential knowledge
- Skills may be assessed through simulations, using anatomical models, manikins or in a high fidelity simulation centre
- For assessment purposes, demonstration of skills in CPR procedures requires using a model of the human body (resuscitation manikin) in line with ARC Guidelines

Access and equity considerations:

- All workers in the health industry should be aware of access and equity issues in relation to their own area of work
- All workers should develop their ability to work in a culturally diverse environment
- In recognition of particular health issues facing Aboriginal and Torres Strait Islander communities, workers should be aware of cultural, historical and current issues impacting on health of Aboriginal and Torres Strait Islander people
- Assessors and trainers must take into account relevant access and equity issues, in particular relating to factors impacting on health of Aboriginal and/or Torres Strait Islander clients and communities

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Range Statement

RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Contextualisation to address specific requirements may include:	• Focus on first aid management of specific types of injury • First aid provision under specific constraints or circumstances (eg. in confined spaces, in maritime work environment or in work environment involving identified risks/hazards)
First aid management must take into account:	• Workplace policies and procedures • Industry/site specific regulations, codes etc. • OHS requirements • State and territory workplace health and safety requirements
A hazard is:	• A source or situation with the potential for harm in terms of human injury or ill-health, damage to property, the environment, or a combination of these
Hazards may include:	• Physical hazards • Biological hazards • Chemical hazards • Hazards associated with manual handling

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RANGE STATEMENT

Risks may include:

- Risks from worksite equipment, machinery and substances
- Risks from first aid equipment (oxygen cylinders, AED)
- Environmental risks
- Exposure to blood and other body substances
- Risk of further injury to the casualty
- Risks associated with the proximity of other workers and bystanders
- Risks from vehicles
- Fallen power lines, step and touch potential

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RANGE STATEMENT

Casualty's condition is managed for:

- Abdominal injuries
- Airway obstruction
- Allergic reactions
- Altered and loss of consciousness
- Bleeding
- Burns - thermal, chemical, friction, electrical
- Chest pain
- Injuries: cold and crush injuries; eye and ear injuries; head, neck and spinal injuries; minor skin injuries; needle stick injuries; soft tissue injuries including sprains, strains, dislocations
- Near drowning
- Envenomation - snake, spider, insect and marine bites
- Environmental conditions such as hypothermia, hyperthermia, dehydration, heat stroke
- Fractures
- Medical conditions, including cardiac conditions, epilepsy, diabetes, asthma and other respiratory conditions
- No signs of life
- Pain relief
- Poisoning and toxic substances (including chemical contamination)
- Respiratory distress
- Shock
- Seizures
- Stroke
- Substance misuse - all drugs and alcohol, including illicit drugs

First Aid management skills must include in accordance with ARC Guidelines, State/Territory regulations, legislation and policies and industry requirements:

- Administration of analgesia
- CPR
- Infection control
- AED
- Identification and management of anaphylactic shock reaction in accordance with ARC Guidelines, State/Territory regulations, legislation and policies and industry requirements
- Oxygen administration

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RANGE STATEMENT

First aid management must account for:

- Location and nature of the workplace
- Environmental conditions eg electricity (high or low voltage), biological risks, weather, motor vehicle accidents
- Location of emergency services personnel
- Number of casualties and potential casualties
- Use and availability of first aid equipment, resources and pharmaceuticals
- Types of dangers/risks to the casualty and any others in the vicinity of the situation
- Confined spaces, subject to industry need

Medications may include in accordance with ARC Guidelines, State/Territory regulations, legislation and policies and industry requirements:

- Oxygen
- Analgesics
- Bronchodilators
- Casualty's own medications
- Auto-injectors

Resources and equipment are used appropriate to the risk to be met and may include:

- Oxygen resuscitation/cylinders
- AED
- Thermometers
- Auto-injectors
- Back boards
- Stretchers
- Soft bag resuscitator
- First aid kit
- Casualty's medication
- Analgesic inhalers
- Analgesic gas equipment
- Resuscitation mask or barrier
- Spacer device
- Cervical collars

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RANGE STATEMENT

Information to be documented may include:

- Time
- Location
- Description of injury
- First aid management
- Fluid intake/output, including fluid loss via:
  - blood
  - vomit
  - faeces
  - urine
- Administration of medication including:
  - time
  - date
  - person administering
  - dose
- Vital signs

Established first aid principles include:

- Checking the site for danger to self, the casualty and others and minimising the danger
- Checking and maintaining the casualty's airway, breathing and circulation

Unit Sector(s)

Not Applicable

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ICAICT308A Use advanced features of computer applications

Modification History

Version	Comments
ICAICT308A	This version first released with *ICA11 Information and Communications Technology Training Package version 1.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to use computer applications employing advanced features. It involves manipulating data and accessing support resources to solve routine problems.

Application of the Unit

This unit applies to individuals who are expert users or advanced users and capable of tutoring colleagues in the use of commercial applications.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	**Performance Criteria**
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

Elements and Performance Criteria

1. Manipulate data	1.1 Employ ***advanced features*** of ***applications*** in the preparation and presentation of data 1.2 Transfer data between applications, linking and embedding related data files as required 1.3 Create and employ ***objects***, macros and templates for routine activities 1.4 Use shortcuts and features to increase personal productivity
2. Access and use support resources	2.1 Solve routine problems using support resources 2.2 Use online help to overcome difficulties with applications 2.3 Solve problems with manuals and training booklets 2.4 Access and apply technical support for ***system*** problems, using troubleshooting results and alert messages

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with supervisors and peers
  - seek assistance and expert advice
  - use online help
- literacy skills to interpret technical documentation, equipment manuals and specifications
- planning and organisational skills to prioritise and monitor own work
- problem-solving skills to solve operational problems as they arise
- research skills to source support resources to solve routine problems
- safety awareness skills to work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- technical skills to:
  - apply technical support for system problems
  - operate software applications
  - use applications features
  - use online help.

Required knowledge

- basic knowledge of operating systems software and system tools
- vendor product directions in computer applications
- vendor applications and their features.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • use at least three computer applications employing advanced features and import and export capacities for efficiency and productivity purposes • solve routine problems using support resources.
Context of and specific resources for assessment	Assessment must ensure access to: • site where advanced features of computer applications may be used • computer applications currently used in industry • documents or information containing data suitable to demonstrate advanced features of computer applications • support resources, including online, manuals and training booklets • appropriate learning and assessment support when required • modified equipment for people with special needs.

Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:
	• verbal or written questioning to assess candidate's knowledge of:
	  • support resources, including online, manuals and training booklets
	  • advanced features of a number of computer applications
	• direct observation of candidate:
	  • manipulating data between applications
	  • creating and employing objects, macros and templates.

Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate.

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	Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed. Indigenous people and other people from a non-English speaking background may need additional support. In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Advanced features may include:	• conditional formatting • cross-referencing • form controls • forms • formulas • graphics • hyperlinks • macros • mail merge • master documents • names • object linking and embedding (OLE) • ranges • sections • styles • tables • templates • validation.

Applications may include:	• commercial software applications and organisation-specific software:
	  • communication packages
	  • database
	  • graphic
	  • presentation functionalities
	  • spreadsheet
	  • word-processing
	• presentation applications contained in:
	  • Claris Works
	  • Lotus Suite
	  • Microsoft Office
	  • Star Office
	  • other similar applications.

Objects may include:	• buttons

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	• checkboxes • drop-down lists • option buttons • text boxes.
System may include:	• application • business • computers • financial system • information system • management system • network • software.

Unit Sector(s)

General ICT

Custom Content Section

Not applicable.

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LGACOM401A Administer contracts

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor This unit covers the administration, monitoring and transition of contracts.

Application of the Unit

Application of the Unit This unit supports the attainment of skills and knowledge required for competent workplace performance in councils of all sizes. Knowledge of the legislation and regulations within which councils must operate is essential. The unique nature of councils, as a tier of government directed by elected members and reflecting the needs of local communities, must be appropriately reflected.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

Employability Skills Information

Employability Skills This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Establish administration procedures**	1.1 Administrative processes for contracts are implemented according to council quality improvement 1.2 Contract requirements are confirmed with relevant contract personnel. 1.3 Complaint system is established according to council policy and procedures. 1.4 Consistent and accurate records of contract progress are maintained.
2 **Monitor contract time frame and specifications**	2.1 Regular inspections of contract services are undertaken to ensure compliance with specifications and program for completion. 2.2 Regular planned progress meetings are held and documented between all contract personnel to ensure problems are identified and resolved early. 2.3 Variations between the specified scope of services and the contract are identified and documented, and relevant personnel are notified without delay. 2.4 Testing of services in progress is carried out as required by the contract and in accordance with legislation, regulations and council policy.
3 **Monitor costs**	3.1 Contract costs are monitored on a regular basis to ensure that the service is carried out in accordance with financial and contractual requirements. 3.2 Payments for contract services are authorised in accordance with the conditions of contract and delegation of officer. 3.3 Transaction costs are monitored through an established system.
4 **Resolve contractual disputes**	4.1 Disagreements are investigated to identify cause and validity. 4.2 Terms of resolution are negotiated and agreed. 4.3 Contract provisions for dispute resolution are followed. 4.4 Legal and management advice is sought at an early stage of any dispute to ensure that the contractor has a clear understanding of the council's legal position and that the council is not exposed to undue legal risk. 4.5 Appropriate legal advice is sought at any stage in order to clarify any technical aspects of a dispute.
5 **Implement contract transition**	5.1 Contract conditions and responsibilities are reviewed with relevant personnel to ensure satisfactory

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ELEMENT	PERFORMANCE CRITERIA
	completion of contract. 5.2 Contract completion is authorised in writing to confirm completed services have been undertaken according to contract objectives and specifications. 5.3 Final statement is reconciled. 5.4 Contractor performance and level of service are evaluated against agreed benchmark. 5.5 End-of-service or renewed contracts are coordinated to meet council requirements. 5.6 Quality of contract documentation is assessed.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit

Required Skills

- negotiation and liaison across a range of internal and external customers
- contingency management
- contract interpretation
- project management
- conflict resolution
- client interaction
- financial and time management.

Required Knowledge

- relevant legislation, regulations, codes of practice and policies applicable to the industry and the council, including those relating to environmental/sustainable practice and OHS
- relevant systems and procedures to aid in the achievement of sustainable practice
- contract procedures
- contract law
- knowledge of the contract service
- performance standards and analysis
- complaint procedures
- costing processes.

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Evidence Guide

EVIDENCE GUIDE

Overview of assessment requirements	A person who demonstrates competency in this unit will be able to perform the outcomes described in the Elements to the required performance level detailed in the Performance Criteria. The knowledge and skill requirements described in the Range Statement must also be demonstrated. For example, knowledge of the legislative framework and safe work practices that underpin the performance of the unit are also required to be demonstrated.
Critical aspects of evidence to be considered	Maintenance of files relating to records of meetings, payments, progress reports, file notes and discussions. Effective communication with the contractor. Monitoring of industry changes. Making recommendations covering a range of contracts. Maintenance of WorkCover, OHS and audit processes and up-to-date insurance files. Monitoring relevant laws, by laws and regulations or best practice on environmental performance and sustainability
Context of assessment	On the job or in a simulated work environment.
Relationship to other units(prerequisite or co-requisite units)	Prerequisite units: nil. Co-requisite units: nil.
Method of assessment	The following assessment methods are suggested: observation of the learner performing a range of workplace tasks over sufficient time to demonstrate handling of a range of contingencies written and/or oral questioning to assess knowledge and understanding completion of workplace documentation third-party reports from experienced practitioners completion of self-paced learning materials including personal reflection and feedback from trainer, coach or supervisor.
Evidence required for demonstration of consistent performance	Evidence will need to be gathered over time across a range of variables.

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Resource implications	Access to a workplace or simulated case study that provides such resources as: a range of council contract documentation and records relevant commercial law texts on contracts relevant council policies and procedures documents.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Administrative processes for contracts may include:	• supervision • management • monitoring • overseeing.
Records of contract progress may include:	• photographs • data • progress reports • customer surveys • minutes of meetings.
Services may include:	• product • maintenance • supply • cleaning • waste • research • environmental initiatives • civil • child care • other council services.
Testing may include:	• samples • routine checks • audits • observations • meetings • laboratory
Payments may include:	• progressive • lump sum.
Conditions of contract may include:	• tender documentation • maintenance plan • compliance with sustainable practice guidelines • defects liability.
Contractor performance is evaluated in terms of:	• adherence to timelines and estimated costs • progress towards objectives • adherence to quality standards, environmental and sustainability standards and OHS and EEO practices.

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RANGE STATEMENT

Hidden text

Unit Sector(s)

Unit Sector Administration Units

Hidden text

Competency field

Competency Field

co-requisite unit/s

Co-requisite Unit/s

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LGACOM402A Arrange contracts

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor This unit covers receiving and evaluating tenders, preparing recommendations and notifying tenderers of the outcome.

Application of the Unit

Application of the Unit This unit supports the attainment of skills and knowledge required for competent workplace performance in councils of all sizes. Knowledge of the legislation and regulations within which councils must operate is essential. The unique nature of councils, as a tier of government directed by elected members and reflecting the needs of local communities, must be appropriately reflected.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

Employability Skills Information

Employability Skills This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Receive tenders**	1.1. Tenders are received in accordance with council procedures. 1.2. Record of applications is maintained.
2. **Evaluate tenders against agreed criteria**	2.1. A comparative statement of tenders highlighting key factors is prepared. 2.2. Bids are compared and assessed. 2.3. The bid or shortlist of bids that meets service requirements is identified. 2.4. Tender presentations are organised and attended to assist in the selection process, where required.
3. **Prepare recommendations for council**	3.1. Quality accreditation, previous project records, employment practices and occupational health and safety (OHS) records are verified. 3.2. An accurate report with clear recommendations is prepared for council to enable informed decision making to occur.
4. **Formalise acceptance of tender**	4.1. A letter of acceptance is sent to successful tenderer outlining accurate details and conditions. 4.2. Contract documentation is completed in accordance with standards and council procedures. 4.3. Unsuccessful tenderers are informed of outcome according to council procedures. 4.4. Quality of contract documentation is evaluated in the light of tenders received.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit

Required Skills

- report writing
- oral presentation skills and interview techniques
- applying criteria
- verifying claims
- investigating.

Required Knowledge

- relevant council policies and procedures
- quality assurance methods
- relevant Australian and industry standards
- statutory and council tender requirements
- contractual processes
- statutory council requirements
- tendering codes of practice
- evaluation methods.
- Strategies, policies and procedures on sustainable practice

Hidden text

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Evidence Guide

EVIDENCE GUIDE

Overview of assessment requirements	A person who demonstrates competency in this unit will be able to perform the outcomes described in the Elements to the required performance level detailed in the Performance Criteria. The knowledge and skill requirements described in the Range Statement must also be demonstrated. For example, knowledge of the legislative framework and safe work practices that underpin the performance of the unit are also required to be demonstrated
Critical aspects of evidence to be considered	Provide an accurate evaluation report. Identify the financial stability of the tenderer. Identify the quality standards of the tenderer. Ensure confidentiality of the tender process Adhere to sustainable practices Observe relevant environmental procedures
Context of assessment	On the job or in a simulated work environment.
Relationship to other units(prerequisite or co-requisite units)	Prerequisite units: nil. Co-requisite units: nil.
Method of assessment	The following assessment methods are suggested: observation of the learner performing a range of workplace tasks over sufficient time to demonstrate handling of a range of contingencies written and/or oral questioning to assess knowledge and understanding completion of workplace documentation third-party reports from experienced practitioners completion of self-paced learning materials including personal reflection and feedback from trainer, coach or supervisor.
Evidence required for demonstration of consistent performance	Evidence will need to be gathered over time across a range of variables.
Resource implications	Access to a workplace or simulated case study that enables competency to be assessed and that provides such resources as: relevant council policy and procedure documentation

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relevant Australian and industry standards

a range of tender examples.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Comparative statement may include:	• matrix • data • criteria • compliance • score.
Council procedures may include:	• code of conduct • probity guidelines • anti-corruption policies • equal employment opportunity • OHS • risk management • resource management/sustainable practice • environmental awareness • storage and disposal of documentation • security of tenders.
Formalisation may include:	• contract signing procedure • preliminary deposits.
Service requirements may include:	• life-cycle costing • financial stability • capacity • sustainability • employment and industrial relations history • quality assurance • OHS records.
Presentations may include:	• meetings • site visits • project inspections • interviews.

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Unit Sector(s)

Unit Sector Administration Units

Hidden text

Competency field

Competency Field

co-requisite unit/s

Co-requisite Unit/s

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LGACOM409A Prepare tender documentation

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor This unit covers the scoping of contract services, the preparation of tender documentation and the calling for tenders.

Application of the Unit

Application of the Unit This unit supports the attainment of skills and knowledge required for competent workplace performance in councils of all sizes. Knowledge of the legislation and regulations within which councils must operate is essential. The unique nature of councils, as a tier of government directed by elected members and reflecting the needs of local communities, must be appropriately reflected.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

Employability Skills Information

Employability Skills This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Identify the extent and nature of services to be contracted**	1.1. Scope of the services is confirmed and reviewed to ensure parameters meet current requirements. 1.2. Statutory and council requirements are identified to determine available options. 1.3. Detailed parameters are specified to enable a complete brief to be prepared. 1.4. The extent of the contract package is determined.
2. **Select appropriate method for tender**	2.1. Area to be contracted is examined. 2.2. Contract options are identified and analysed. 2.3. Benefits, costs and opportunities of each option are identified. 2.4. Appropriate contract option is selected.
3. **Prepare tender specifications according to council and Australian standards**	3.1. Complete and detailed service specifications are prepared consistent with council policy and Australian standards and based on service profile and review. 3.2. Legislative, environmental, sustainability practices, occupational health and safety and risk management requirements are applied. 3.3. Quality assurance methods are applied to the preparation of service specifications. 3.4. Service specifications are prepared in consultation with relevant staff that complement required outcomes. 3.5. Details on methods, standards, materials, products, contractors and performance period are provided by quality service specifications, as applicable.
4. **Prepare evaluation criteria**	4.1. A tender review panel or team is selected from appropriate personnel. 4.2. Criteria are established based on the specifications, product and service required. 4.3. Criteria are written clearly to enable bids to be compared. 4.4. Criteria are ranked against council procedures.
5. **Prepare tender document**	5.1. Tender documents are prepared clearly and concisely. 5.2. Tender documents are prepared that enable competitive pricing of products. 5.3. Tender documents are designed to enable valid comparisons between tenders received.
6. **Invite tenders**	6.1. Invitations are prepared based on the type of tendering method used.

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ELEMENT	PERFORMANCE CRITERIA
	6.2. Source list is prepared according to council procedures. 6.3. Advertisement is prepared and placed according to the tender method.

Hidden text

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit

Required Skills

- report and specification writing
- qualitative and quantitative research
- analytical
- consultation with relevant personnel
- specification interpretation
- negotiation with relevant internal and external people
- observation of protocol and probity policies.

Required Knowledge

- relevant council policies, procedures and codes of conduct
- sustainability practices
- quality assurance systems
- relevant Australian and industry standards
- statutory and council tender requirements
- contractual processes
- industrial agreements
- statutory council requirements
- tendering codes of practice
- national competition policy.

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Evidence Guide

EVIDENCE GUIDE

Overview of assessment requirements	A person who demonstrates competency in this unit will be able to perform the outcomes described in the Elements to the required performance level detailed in the Performance Criteria. The knowledge and skill requirements described in the Range Statement must also be demonstrated. For example, knowledge of the legislative framework and safe work practices that underpin the performance of the unit are also required to be demonstrated.
Critical aspects of evidence to be considered	Contract authorisation process is undertaken. Appropriate advertisement is placed. Required specifications are produced. Conditions of contract are produced. Industry standard conditions of contract are applied. Confidentiality and probity are observed for both in-house bids and/or external tenders.
Context of assessment	On the job or in a simulated work environment.
Relationship to other units(prerequisite or co-requisite units)	Prerequisite units: nil. Co-requisite units: nil.
Method of assessment	The following assessment methods are suggested: • observation of the learner performing a range of workplace tasks over sufficient time to demonstrate handling of a range of contingencies • written and/or oral questioning to assess knowledge and understanding • completion of workplace documentation • third-party reports from experienced practitioners • completion of self-paced learning materials including personal reflection and feedback from trainer, coach or supervisor.
Evidence required for demonstration of consistent performance	Evidence will need to be gathered over time across a range of variables.
Resource implications	Access to a workplace or simulated case study that provides the following resources: • relevant council policies and procedures

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EVIDENCE GUIDE

- national competition policy information.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Services may include:	• works • function • provision • community expectations.
Parameters may include:	• budget range • council resources • level of risk • council policies, such as 'buy local'.
Tendering methodology may include:	• lump sum • unit rate • partnership • services process.
Tendering method may include:	• expression of interest • public tender • invitation • verbal • written • in-house bid • select tender.
Preparation of tender documentation may include:	• Preparation of tender documentation may include:
Advertisement may include:	• newspaper • in-house • trade magazines • according to council policy.
Legislative requirements may include:	• WorkCover • risk management • occupational health and safety • sustainability • equal employment opportunity • sexual harassment • public liability • professional indemnity • evidence of insurance cover

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RANGE STATEMENT

	• quality assurance.
Tender documents may include:	• general conditions • special clauses • technical conditions • standard specifications • code of tendering • statutory declaration • evaluation criteria • drawings • implementation plan • legislative amendments • legal endorsement.
Comparative statement may include:	• matrix • data • criteria • compliance • score.
Formalisation may include:	• contract signing procedure • preliminary deposits.
Evaluation may include:	• previous projects • verification of quality accreditation • capacity • capability • risk • security • service.

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Unit Sector(s)

Unit Sector Administration Units

Hidden text

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Competency field

Competency Field

co-requisite unit/s

Co-requisite Unit/s

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LGACOM410A Prepare response to tenders

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor This unit covers responding to tenders by preparing a tender bid or submission.

Application of the Unit

Application of the Unit This unit supports the attainment of skills and knowledge required for competent workplace performance in councils of all sizes. Knowledge of the legislation and regulations within which councils must operate is essential. The unique nature of councils, as a tier of government directed by elected members and reflecting the needs of local communities, must be appropriately reflected.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

Employability Skills Information

Employability Skills This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Identify requirements of the tender**	1.1. Project specifications are identified. 1.2. Scope of the job is defined by review of supplied details. 1.3. All available information is obtained from the tender supplier, including protocols. 1.4. Other successful bid documents are accessed to inform tender bid. 1.5. Appropriate personnel are consulted regarding availability and capacity to perform work. 1.6. Resources required to compete for tender are determined.
2. **Prepare relevant information**	2.1. Resource requirements are identified. 2.2. Information is collated and prepared in an appropriate format. 2.3. Information is circulated to appropriate personnel for review and modifications are undertaken.
3. **Carry out benchmarking of resources with other council or industry sections**	3.1. Section resources are reviewed against current core and non-core activities. 3.2. Comparable relevant external bodies are identified. 3.3. Value-added opportunities are identified. 3.4. Resource requirements are compared.
4. **Prepare a tender bid**	4.1. Estimations are detailed in accordance with established procedures and requirements, balancing time, cost, quality and quantity against the tender specifications. 4.2. Work is defined and appropriately sequenced in accordance with requirements. 4.3. Contingency plans are detailed in accordance with established procedures. 4.4. Bid is prepared according to identified format and council requirements. 4.5. Budget approval is sought. 4.6. Bid is submitted to tenderer.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit

Required Skills

- logical argument for written reports
- verbal presentation of bid.

Required Knowledge

- national competition policy and its application at state and enterprise level
- core and non-core activities
- occupational health and safety
- strategies, policies and procedures on sustainable practice
- risk assessment
- work flow.

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Evidence Guide

EVIDENCE GUIDE

Overview of assessment requirements	A person who demonstrates competency in this unit will be able to perform the outcomes described in the Elements to the required performance level detailed in the Performance Criteria. The knowledge and skill requirements described in the Range Statement must also be demonstrated. For example, knowledge of the legislative framework and safe work practices that underpin the performance of the unit are also required to be demonstrated.
Critical aspects of evidence to be considered	Indication of meeting all legislative requirements. Adherence to sustainable practices Resources are available and section has capacity.
Context of assessment	On the job or in a simulated work environment.
Relationship to other units(prerequisite or co-requisite units)	Prerequisite units: nil. Co-requisite units: nil.
Method of assessment	The following assessment methods are suggested: • observation of the learner performing a range of workplace tasks over sufficient time to demonstrate handling of a range of contingencies • written and/or oral questioning to assess knowledge and understanding • completion of workplace documentation • third-party reports from experienced practitioners • completion of self-paced learning materials including personal reflection and feedback from trainer, coach or supervisor.
Evidence required for demonstration of consistent performance	Evidence will need to be gathered over time across a range of variables.
Resource implications	Access to a workplace or simulated work environment that encompasses the following resources: • copy of national competition policy • council documentation relating to tender process • real or simulated case studies of tender subjects.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Tenders may include:	• in-house • negotiated • open • selective.
Estimates may include:	• oral • written.
Capacity scan may include:	• resources • time • other priorities • competition • facilities • expertise of staff.
Resources may include:	• work • time • personnel • equipment.
Information from tender supplier may include:	• specifications • performance measures • due date • number of copies required • format of information • protocols.

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Unit Sector(s)

Unit Sector Administration Units

Hidden text

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Competency field

Competency Field

co-requisite unit/s

Co-requisite Unit/s

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LGADMIN417A Conduct community consultations

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

This unit covers conducting community consultation on behalf of the organisation in line with its strategic vision and program development. The unit is appropriate to employees in all areas of the organisation and covers the process of consultation, from identification of stakeholders and methodologies through to documentation of issues and formulation of recommendations.

Application of the Unit

Application of the Unit

This unit supports the attainment of skills and knowledge required for competent workplace performance in councils of all sizes. Knowledge of the legislation and regulations within which councils must operate is essential. The unique nature of councils, as a tier of government directed by elected members and reflecting the needs of local communities, must be appropriately reflected.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Plan community consultation**	1.1. Specific consultation needs are identified based on the issue and organisational requirements. 1.2. The objectives for the consultation are discussed with appropriate personnel. 1.3. Consultation methods are identified and discussed with appropriate personnel. 1.4. A consultation plan is developed and discussed and/or endorsed with appropriate personnel.
2. **Facilitate consultation**	2.1. Information is prepared that is clear, accurate and appropriate to the needs of the parties. 2.2. Measures to expedite community consultation are taken to ensure consultation occurs within an identified time frame. 2.3. Information is provided to participants at an appropriate time and place. 2.4. Access and equity requirements are implemented in the consultation. 2.5. Consultation is undertaken using effective facilitation techniques suited to the target audience. 2.6. Difficult situations are handled effectively using collaborative problem-solving techniques.
3. **Report consultation outcomes**	3.1. Responses are collated and formatted to facilitate analysis. 3.2. A report is prepared that includes recommendations to enable informed decision making. 3.3. Feedback is provided to interested parties. 3.4. Other issues raised during consultation are directed to relevant department or person for action. 3.5. The effectiveness of the consultation process is evaluated and action is taken where necessary.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit

Required Skills

- consultation
- presentation
- negotiation
- report writing
- quantitative and qualitative analysis
- facilitation
- technology
- decision making.

Required Knowledge

- relevant council policies and procedures
- relevant legislation
- strategies, policies and procedures on minimising resource use
- access and equity issues
- strategies for consultation
- code of conduct and ethics
- facilitation techniques.

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Evidence Guide

EVIDENCE GUIDE

Overview of assessment requirements	A person who demonstrates competency in this unit will be able to perform the outcomes described in the Elements to the required performance level detailed in the Performance Criteria. The knowledge and skill requirements described in the Range Statement must also be demonstrated. For example, knowledge of the legislative framework and safe work practices that underpin the performance of the unit are also required to be demonstrated.
Critical aspects of evidence to be considered	The demonstrated ability to: • plan a community consultation to enable and encourage relevant groups or individuals to be involved • facilitate a community consultation that produces valid and useful information and ensures that the council's image and reputation are maintained or enhanced • prepare an accurate report on the outcomes of the community consultation that enables informed decision making to occur.
Context of assessment	Competency is demonstrated by performance of all stated criteria, with particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope of the Range Statement. Assessment must take account of the endorsed Assessment Guidelines in the Local Government Training Package. Assessment of the performance requirements in this unit should be undertaken in an actual workplace or simulated environment. Assessment should reinforce the integration of the key competencies for the particular AQF level. Refer to the key competency levels at the end of this unit.
Relationship to other units(prerequisite or co-requisite units)	To enable holistic assessment this unit may be assessed with other units that form part of the job role, in particular: LGACOMP024A Develop community relations.
Method of assessment	The following assessment methods are suggested: • observation of the learner performing a range of workplace tasks over sufficient time to demonstrate handling of a range of contingencies • written and/or oral questioning to assess knowledge and understanding

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EVIDENCE GUIDE

	• completion of workplace documentation • third-party reports from experienced practitioners • completion of self-paced learning materials including personal reflection and feedback from trainer, coach or supervisor.
Evidence required for demonstration of consistent performance	Evidence should be collected over a set period of time that is sufficient to include dealings with an appropriate range and variety of situations.
Resource implications	The learner and trainer should have access to appropriate documentation and resources normally used in the workplace.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Consultation methods may include:	• public meetings • phone-ins • questionnaires • informal gatherings • door knocks • council meetings.
Information may include:	• graphics • models • computer animations • video displays • overheads • handouts • development plans • interpreter service.
Participants may include:	• community groups • other authorities • individuals • emergency authorities • private sector business interests • special interest groups • experts.
Facilitation techniques may include:	• active listening • targeted questioning • points of clarification • group discussions • presentation • group activities.

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Unit Sector(s)

Unit Sector Administration Units

Hidden text

Competency field

Competency Field

co-requisite unit/s

Co-requisite Unit/s

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LGAWORK401A Develop works maintenance schedule

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor This unit covers developing a works maintenance schedule to meet the outcomes of a council asset management program.

Application of the Unit

Application of the Unit This unit supports the attainment of skills and knowledge required for competent workplace performance in councils of all sizes. Knowledge of the legislation and regulations within which councils must operate is essential. The unique nature of councils, as a tier of government directed by elected members and reflecting the needs of local communities, must be appropriately reflected.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

Employability Skills Information

Employability Skills This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Prioritise works requirements**	1.1. Work priorities are identified from council works requirements. 1.2. Information from visual inspections and customer reports or requests is considered in accordance with council procedures .
2. **Prepare works schedule**	2.1. Scope of work is confirmed to enable a preliminary estimate of resources and scheduling. 2.2. A feasibility plan is prepared to complete the work. 2.3. Recently completed works are reviewed to determine preliminary costs of design and construction.
3. **Assess works proposals against budget and asset management program**	3.1. Works proposals are assessed against council budget allocation. 3.2. Proposed maintenance works are prioritised and resources are allocated according to demand and the asset management program.
4. **Complete documentation**	4.1. Clear, concise reports are prepared and submitted as required. 4.2. An assets management system is updated in line with council procedures.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit

Required Skills

- project management in an engineering, civil construction or maintenance area
- interpreting plans, maps, charts, databases and specifications
- analysing data
- budgeting and life-cycle costing
- preparing feasibility plans under supervision.

Required Knowledge

- relevant council policies and procedures
- relevant environmental legislation, policies and procedures
- range of services required and availability
- council's assets network
- maintenance history of assets
- research and scope of works project
- other relevant council priorities.

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Evidence Guide

EVIDENCE GUIDE

Overview of assessment requirements	A person who demonstrates competency in this unit will be able to perform the outcomes described in the Elements to the required performance level detailed in the Performance Criteria. The knowledge and skill requirements described in the Range Statement must also be demonstrated. For example, knowledge of the legislative framework and safe work practices that underpin the performance of the unit must be demonstrated.
Critical aspects of evidence to be considered	Assets register is used effectively. Council budget and planning estimate processes are adhered to. Information is presented clearly and concisely along with recommendations. Effective communication strategies for use with council personnel and council customers are developed and implemented.
Context of assessment	May be assessed through: • on the job • simulated workplace environment • written assignment • short-answer test • oral questioning • observation • or any combination of the above.
Relationship to other units (prerequisite or co-requisite units)	To enable holistic assessment this unit may be assessed with other units that form part of the job role.
Method of assessment	The following assessment methods are suggested: • observation of the learner performing a range of workplace tasks over sufficient time to demonstrate handling of a range of contingencies • written and/or oral questioning to assess knowledge and understanding • completion of workplace documentation • third-party reports from experienced practitioners • completion of self-paced learning materials including personal reflection and feedback from trainer, coach or supervisor.

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Evidence required for demonstration of consistent performance	Evidence will need to be gathered over time across a range of variables.
Resource implications	In accordance with a range of variable requirements.

Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Source of funding may include:	• commonwealth, state and local government • other public tenders • council loans • infrastructure bonds.
Assets may include:	• as determined by the council assets register.
Customers may include:	• residents • rate payers • businesses • elected members • other personnel.
Council procedures may include:	• assets management system • customer requests • work plans • budget and planning estimates.

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Unit Sector(s)

Unit Sector	Operational Works

Hidden text

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Competency field

Competency Field

co-requisite unit/s

Co-requisite Unit/s

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LGAWORK402A Prepare for operational works

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor This unit covers preparing a works project plan that is conveyed to relevant stakeholders.

Application of the Unit

Application of the Unit This unit supports the attainment of skills and knowledge required for competent workplace performance in councils of all sizes. Knowledge of the legislation and regulations within which councils must operate is essential. The unique nature of councils, as a tier of government directed by elected members and reflecting the needs of local communities, must be appropriately reflected.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

Employability Skills Information

Employability Skills This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Prepare a plan to undertake works**	1.1. Plans for works tasks are developed within allocated budgets, council policy, relevant management plans and in compliance with relevant structural design standards. 1.2. Plans are communicated to, and understood by, persons responsible for carrying out the works. 1.3. Accurate quantities of resources and materials are assessed to meet the project needs. 1.4. Areas for amenities and/or storage of tools, equipment and materials are identified. 1.5. Works are planned within occupational health and safety requirements. 1.6. Liaison with relevant agencies and authorities is undertaken to identify the location of potential hazards.
2. **Assess current conditions and traffic volume**	2.1. Relevant authorities and persons affected by the work are informed of traffic control and other necessary measures. 2.2. Traffic control devices and signals are selected in accordance with regulations and standard practice. 2.3. Appropriate traffic control equipment is selected according to the conditions that apply.
3. **Inform the general public and relevant authorities**	3.1. Instructions and requests to the public and authorities are transmitted concisely and in accordance with council's operating procedures. 3.2. Public enquiries are responded to in accordance with council procedures . 3.3. Information relating to incidents or accidents is reported and recorded clearly and accurately in accordance with council and legal requirements.
4. **Procure and confirm required materials and equipment**	4.1. Availability of specified resources and materials or alternatives is confirmed. 4.2. Resources and materials are procured in accordance with council policies and procedures.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit

Required Skills

- organisational capability across a range of physical and human resources
- communicating with public, other authorities and council staff
- estimating resources and capacity
- calculating quantities of resources and materials.

Required Knowledge

- materials technology
- construction technology
- works methods
- state and local government standards
- relevant environmental legislation
- climatic conditions
- supply networks and council procurement policies
- road and traffic safety regulations.

Hidden text

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Evidence Guide

EVIDENCE GUIDE

Overview of assessment requirements	A person who demonstrates competency in this unit will be able to perform the outcomes described in the Elements to the required performance level detailed in the Performance Criteria. The knowledge and skill requirements described in the Range Statement must also be demonstrated. For example, knowledge of the legislative framework and safe work practices that underpin the performance of the unit must be demonstrated.
Critical aspects of evidence to be considered	Works project information is relayed to relevant staff. Liaison with public and relevant authorities is undertaken. Safety of work site is ensured.
Context of assessment	May be assessed through: • on the job • simulated workplace environment • written assignment • short-answer test • oral questioning • observation • or any combination of the above.
Relationship to other units(prerequisite or co-requisite units)	To enable holistic assessment this unit may be assessed with other units that form part of the job role.
Method of assessment	The following assessment methods are suggested: • observation of the learner performing a range of workplace tasks over sufficient time to demonstrate handling of a range of contingencies • written and/or oral questioning to assess knowledge and understanding • completion of workplace documentation • third-party reports from experienced practitioners • completion of self-paced learning materials including personal reflection and feedback from trainer, coach or supervisor.
Evidence required for demonstration of consistent performance	Evidence will need to be gathered over time across a range of variables.

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EVIDENCE GUIDE

Resource implications	In accordance with a range of variable requirements.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Council programs may include:	• council works programs • departmental works programs • depot programs • maintenance programs • works patrols.
Council procedures may include:	• communicating to the public on traffic disruption • planning • seeking permission or approval from other agencies • procuring materials and equipment.
Specialists may include:	• state road and rail authorities • civil and traffic engineers • consultants.
Documentation may include:	• analysis sheets • time sheets • diary entries • work sheets • meeting notes • cost analysis • planning specifications • drawing plans.
Authorities may include:	• police • fire • emergency.
Traffic may include:	• vehicular • aircraft • locomotive • pedestrian • livestock.
Relevant stakeholders may include:	• utilities • road traffic authorities • residents • businesses • community groups • community services • environmental protection agencies.

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RANGE STATEMENT

Hidden text

Unit Sector(s)

Unit Sector Operational Works

Hidden text

Competency field

Competency Field

co-requisite unit/s

Co-requisite Unit/s

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LGAWORK403A Manage civil plant and resources

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor This unit covers managing civil plant and resources.

Application of the Unit

Application of the Unit This unit supports the attainment of skills and knowledge required for competent workplace performance in councils of all sizes. Knowledge of the legislation and regulations within which councils must operate is essential. The unique nature of councils, as a tier of government directed by elected members and reflecting the needs of local communities, must be appropriately reflected.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

Employability Skills Information

Employability Skills This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Manage job for civil construction**	1.1. Job is planned in accordance with drawings and specifications to enable completion on budget and within allocated time. 1.2. Operations identified are consistent with the job plan, work activities are integrated and priorities are established consistent with enterprise policies.
2. **Select appropriate plant and equipment**	2.1. Plant cycles of operation to undertake specific tasks are calculated. 2.2. Plant is selected in relation to its cycle of operation in a primary, secondary or static role. 2.3. Selection of plant and equipment is consistent with work plans, schedules and requirements of the task. 2.4. Availability of existing internal resources is identified. 2.5. Type and availability of external resources are assessed against the demands of the project.
3. **Supervise and organise operation of plant and equipment**	3.1. Selected plant and equipment are monitored on a regular basis to ensure maximum output is achieved. 3.2. Regular planned meetings are held between plant supervisors and works personnel to ensure plant operations are carried out with maximum efficiency. 3.3. Plant and equipment are organised to meet scheduled requirements. 3.4. Testing of works in progress is carried out to ensure selected plant and equipment are achieving specified standards in an efficient manner. 3.5. Consistent and accurate records of plant and equipment operation and use are recorded and maintained. 3.6. Progressive checks are conducted to ensure both routine and periodic plant and equipment maintenance is being carried out.
4. **Maintain records**	4.1. Records are kept in accordance with council requirements. 4.2. Details are recorded clearly, accurately and legibly. 4.3. Records are secured, made accessible and kept up to date.

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Required Skills and Knowledge

Hidden text

This describes the essential skills and knowledge and their level, required for this unit

Required Skills

- plant and equipment
- operating procedures
- prioritising and scheduling
- organising
- supervising
- estimating
- record keeping.

Required Knowledge

- plant and equipment functions
- manufacturers' specifications
- works management
- works methods relating to plant operation
- records maintenance.

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Evidence Guide

EVIDENCE GUIDE

Overview of assessment requirements	A person who demonstrates competency in this unit will be able to perform the outcomes described in the Elements to the required performance level detailed in the Performance Criteria. The knowledge and skill requirements described in the Range Statement must also be demonstrated. For example, knowledge of the legislative framework and safe work practices that underpin the performance of the unit must be demonstrated.
Critical aspects of evidence to be considered	Knowledge of operations and functions of plant and equipment used in civil construction and maintenance is demonstrated. Safety at work site and plant operation is achieved. Relevant council policies and procedures in the operation and maintenance of plant and equipment are adhered to.
Context of assessment	May be assessed through: • on the job • simulated workplace environment • written assignment • short-answer test • oral questioning • observation • or any combination of the above.
Relationship to other units (prerequisite or co-requisite units)	To enable holistic assessment this unit may be assessed with other units that form part of the job role.
Method of assessment	The following assessment methods are suggested: • observation of the learner performing a range of workplace tasks over sufficient time to demonstrate handling of a range of contingencies • written and/or oral questioning to assess knowledge and understanding • completion of workplace documentation • third-party reports from experienced practitioners • completion of self-paced learning materials including personal reflection and feedback from trainer, coach or supervisor.
Evidence required for demonstration of	Evidence will need to be gathered over time across a range of variables.

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EVIDENCE GUIDE

consistent performance	
Resource implications	In accordance with a range of variable requirements.

Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Types of plant may include:	• bulldozers • graders • scrapers • compactors • excavators • backhoes • skid steer • machines • cranes • profilers • sweepers • trucks • tankers • compaction plant.
Records may include:	• manufacturers' data sheet • maintenance • time sheets • plant usage • fuel • oils • spare parts.

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Unit Sector(s)

Unit Sector Operational Works

Hidden text

Competency field

Competency Field

co-requisite unit/s

Co-requisite Unit/s

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LGAWORK501A Prepare preliminary design for operational works

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor This unit covers preparing works related to preliminary design for community consultation and council approval.

Application of the Unit

Application of the Unit This unit supports the attainment of skills and knowledge required for competent workplace performance in councils of all sizes. Knowledge of the legislation and regulations within which councils must operate is essential. The unique nature of councils, as a tier of government directed by elected members and reflecting the needs of local communities, must be appropriately reflected.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

Employability Skills Information

Employability Skills This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Establish design criteria**	1.1. Project objectives are defined so that the preliminary design can address required outcomes. 1.2. Regulations and restrictions on design are identified to ensure design meets relevant standards and codes. 1.3. The physical dimensions of the project are specified to enable the design to proceed. 1.4. An appropriate level of design detail is established to enable a preliminary design to be prepared.
2. **Prepare alternative concepts**	2.1. Similar projects are examined to build on existing knowledge and improve efficiency. 2.2. Feasible concept layouts and supporting statements are prepared that satisfy design objectives within design parameters. 2.3. Alternative concepts are prepared with supporting statements. 2.4. Indicative cost estimates are prepared.
3. **Conduct a safety design audit**	3.1. Agents or authorities relevant to the design are identified. 3.2. A safety design audit is conducted. 3.3. Safety design audit feedback is incorporated into the preliminary design.
4. **Obtain project approvals**	4.1. Relevant utilities that are to be affected, or whose assistance is required, are notified. 4.2. Necessary approvals and permits from relevant authorities are obtained.
5. **Finalise public consultation and prepare report to council**	5.1. An accurate preliminary design report is prepared. 5.2. Consultation opportunities are provided for interested parties to view plan. 5.3. Public feedback is reported in accordance with statutory and legislative requirements. 5.4. Modifications are made to incorporate amendments, and design criteria are adjusted accordingly. 5.5. Final concept plan is submitted to council.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit

Required Skills

- preparing preliminary design to meet specifications
- interpreting relevant government legislation and council policies
- presenting material to council and customers
- computer application of design aid
- interpreting plans, maps, level sheets and specifications
- chart reading
- financial estimations and alternate concepts.

Required Knowledge

- relevant government authorities and council procedures and policies
- relevant legislation, codes of practice and standards
- contractual and legal requirements
- environmental management strategy
- design standards.

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Evidence Guide

EVIDENCE GUIDE

Overview of assessment requirements	A person who demonstrates competency in this unit will be able to perform the outcomes described in the Elements to the required performance level detailed in the Performance Criteria. The knowledge and skill requirements described in the Range Statement must also be demonstrated. For example, knowledge of the legislative framework and safe work practices that underpin the performance of the unit must be demonstrated.
Critical aspects of evidence to be considered	Australian design standards are applied. Review of environmental factors for maintenance and construction projects is conducted. Safety design audit is undertaken.
Context of assessment	May be assessed through: • on the job • simulated workplace environment • written assignment • short-answer test • oral questioning • observation • or any combination of the above.
Relationship to other units(prerequisite or co-requisite units)	To enable holistic assessment this unit may be assessed with other units that form part of the job role.
Method of assessment	The following assessment methods are suggested: • observation of the learner performing a range of workplace tasks over sufficient time to demonstrate handling of a range of contingencies • written and/or oral questioning to assess knowledge and understanding • completion of workplace documentation • third-party reports from experienced practitioners • completion of self-paced learning materials including personal reflection and feedback from trainer, coach or supervisor.
Evidence required for demonstration of consistent performance	Evidence will need to be gathered over time across a range of variables.

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EVIDENCE GUIDE

Resource implications	In accordance with a range of variable requirements.

Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Alternative concepts may include:	• visuals • environment • design • style • cost.
Cost estimates may include:	• review of existing project costs • industry journals • contractor quotes • cost assessors • estimating and quantity surveying firms • data services.
Agents or authorities may include:	• service providers (gas, water, electricity, utilities and communications) • environment protection authorities • planning bodies • state road authorities • community organisations.
Design may include:	• erosion and sediment control plan references • Australian design standards.

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Unit Sector(s)

Unit Sector Operational Works

Hidden text

Competency field

Competency Field

co-requisite unit/s

Co-requisite Unit/s

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LGAWORK502A Prepare detailed works project documentation

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor This unit covers preparing relevant project documentation including specifications, key invoices and estimates.

Application of the Unit

Application of the Unit This unit supports the attainment of skills and knowledge required for competent workplace performance in councils of all sizes. Knowledge of the legislation and regulations within which councils must operate is essential. The unique nature of councils, as a tier of government directed by elected members and reflecting the needs of local communities, must be appropriately reflected.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

Employability Skills Information

Employability Skills This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Prepare design program**	1.1. Design elements are listed to determine the scope and purpose of the design. 1.2. Time constraints and financial limitations are identified. 1.3. Appropriate technical, physical and human resources are assigned to the project. 1.4. Complementary works are identified to enable an efficient design program to be prepared.
2. **Undertake design and prepare working drawings**	2.1. Available information is reviewed and specifications are identified. 2.2. Design manuals are used to ensure the design complies with all statutory and council requirements . 2.3. Working drawings that comply with the design brief are prepared and recorded.
3. **Prepare work specifications**	3.1. Complete and detailed works specifications are prepared at a level consistent with council and relevant standards. 3.2. Quality assurance methods are applied to the preparation of works specifications. 3.3. Works specifications are prepared that complement working drawings. 3.4. Works specifications provide detail on methods, standards, materials, products and contractors as applicable.
4. **Prepare detailed estimate**	4.1. Detail drawings are utilised to prepare an accurate bill of quantities. 4.2. Competitive rates for provision of materials and services are obtained. 4.3. Primary cost items are specified and costed. 4.4. An estimate for contingencies is made within prepared estimates. 4.5. The cost of project support resources is included in detailed estimates.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit

Required Skills

- interpreting relevant acts, regulations, codes, policies, procedures and standards
- interpreting engineering design criteria
- engineering drafting
- calculating weight, volume, ratio and quantity.

Required Knowledge

- federal and state government acts
- local government regulations
- design standards and specifications
- drawing standards and specifications
- interpretation and analysis of resources costing.

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Evidence Guide

EVIDENCE GUIDE

Overview of assessment requirements	A person who demonstrates competency in this unit will be able to perform the outcomes described in the Elements to the required performance level detailed in the Performance Criteria. The knowledge and skill requirements described in the Range Statement must also be demonstrated. For example, knowledge of the legislative framework and safe work practices that underpin the performance of the unit must be demonstrated.
Critical aspects of evidence to be considered	A range of design criteria is included. Drawings are undertaken to meet established standards. Works specifications are prepared. Estimates are detailed and include contingencies.
Context of assessment	May be assessed through: • on the job • simulated workplace environment • written assignment • short-answer test • oral questioning • observation • or any combination of the above.
Relationship to other units(prerequisite or co-requisite units)	To enable holistic assessment this unit may be assessed with other units that form part of the job role.
Method of assessment	The following assessment methods are suggested: • observation of the learner performing a range of workplace tasks over sufficient time to demonstrate handling of a range of contingencies • written and/or oral questioning to assess knowledge and understanding • completion of workplace documentation • third-party reports from experienced practitioners • completion of self-paced learning materials including personal reflection and feedback from trainer, coach or supervisor.
Evidence required for demonstration of	Evidence will need to be gathered over time across a range of variables.

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EVIDENCE GUIDE

consistent performance	
Resource implications	In accordance with a range of variable requirements.

Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Design manuals may include:	• building regulations • Australian standards • state road authority • design manuals • Austroad design manuals • reference texts • council or authority standards • quality assurance manuals • water and sewerage authority and design or industry standards.
Complementary works may include:	• other works that can be carried out effectively and cost efficiently whilst resources are available.
Contingencies may include:	• weather conditions • industrial relations • latent conditions • additional supervision • variation in materials cost and availability.
Estimates may include:	• day labour • contract labour.
Council requirements may include:	• works specifications • design procedures.

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Unit Sector(s)

Unit Sector Operational Works

Hidden text

Competency field

Competency Field

co-requisite unit/s

Co-requisite Unit/s

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LGAWORK503A Undertake project investigation

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor This unit covers undertaking the research of a works project to determine scope and relevant stakeholders.

Application of the Unit

Application of the Unit This unit supports the attainment of skills and knowledge required for competent workplace performance in councils of all sizes. Knowledge of the legislation and regulations within which councils must operate is essential. The unique nature of councils, as a tier of government directed by elected members and reflecting the needs of local communities, must be appropriately reflected.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

Employability Skills Information

Employability Skills This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Determine parameters of project**	1.1. Preliminary scope of project is confirmed and reviewed to ensure parameters meet current requirements . 1.2. Detailed design parameters are specified to enable a complete design brief to be prepared.
2. **Obtain information on existing conditions**	2.1. Surveys of existing conditions are undertaken that are relevant to the proposed works and that impact on the design parameters. 2.2. Liaison with relevant statutory authorities and affected parties is undertaken to ensure works can be coordinated. 2.3. The impact of works on existing assets and the environment is assessed through liaison with relevant and affected parties.
3. **Prepare existing conditions plan**	3.1. An accurate, existing conditions plan is prepared from all collated data to enable a detailed design to proceed. 3.2. An existing conditions plan is produced within regulatory and accepted drafting standards .

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit

Required Skills

- interpersonal communication techniques
- time management
- risk management
- high level negotiation skills
- presenting plans
- collating data
- research expertise.

Required Knowledge

- assets network
- design and drafting principles
- related government bodies
- contractual requirements
- acts, regulations, standards and codes of practice
- council budget cycle.

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Evidence Guide

EVIDENCE GUIDE

Overview of assessment requirements	A person who demonstrates competency in this unit will be able to perform the outcomes described in the Elements to the required performance level detailed in the Performance Criteria. The knowledge and skill requirements described in the Range Statement must also be demonstrated. For example, knowledge of the legislative framework and safe work practices that underpin the performance of the unit must be demonstrated.
Critical aspects of evidence to be considered	Liaison with council and other customers is undertaken. Design parameters are identified. Impact of project on assets and environment is identified.
Context of assessment	May be assessed through: • on the job • simulated workplace environment • written assignment • short-answer test • oral questioning • observation • or any combination of the above.
Relationship to other units (prerequisite or co-requisite units)	To enable holistic assessment this unit may be assessed with other units that form part of the job role.
Method of assessment	The following assessment methods are suggested: • observation of the learner performing a range of workplace tasks over sufficient time to demonstrate handling of a range of contingencies • written and/or oral questioning to assess knowledge and understanding • completion of workplace documentation • third-party reports from experienced practitioners • completion of self-paced learning materials including personal reflection and feedback from trainer, coach or supervisor.
Evidence required for demonstration of consistent performance	Evidence will need to be gathered over time across a range of variables.

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EVIDENCE GUIDE

Resource implications	In accordance with a range of variable requirements.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Requirements may include:	• budget • project scope • facilities • regulations • user group needs • life cycle costing • environment management.
Surveys may include:	• traffic counts • topographical survey • features survey • historical review • title boundaries • local knowledge • levels survey • cross-sectional • people opinion survey • detailing and locating services such as gas, water, electricity and telecommunications.
Drafting standards may include:	• Australian standards code for building and engineering AS1100 - technical drawing • council requirements • council policies and standards.
Stakeholders may include:	• community groups • related government bodies and authorities • internal council sections.
Relevant authorities may include:	• roads and traffic authorities • gas • electricity • other utilities.
Affected parties may include:	• business • community groups • residents.

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Unit Sector(s)

Unit Sector Operational Works

Hidden text

Competency field

Competency Field

co-requisite unit/s

Co-requisite Unit/s

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MEM09011B Apply basic engineering design concepts

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers applying in situ design skills by personnel who are then responsible for the manufacture of the design outcome either individually or as part of a team.

Application of the Unit

Application of the unit	This unit includes the determination of requirements such as location, assembly or other parts of the manufacturing or engineering process and where the designer must consider the impact of the design on other equipment, process or personnel, for example safety aspects of the design. Design tasks undertaken include the application of design concepts to, for example, the fabrication and modification of structures, plant and equipment, and design of tooling and gauges, production control systems, fluid power layouts, electrical circuits etc. The unit applies to the fields of mechanical, production, electrical/electronic, fabrication, and fluid power. **Band**: **A** **Unit Weight**: **6**

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine design requirements	1.1. Design requirement is established from job sheets, instructions or in consultation with appropriate people. 1.2. Design concepts are established and may include consideration of process, material, quantity, cost and outcome. 1.3. Where appropriate, codes, regulations and technical documentation are consulted to establish design limitations in accordance with standard operating procedures. 1.4. Sources of expert assistance are identified and used as required.
2. Create design	2.1. Design meets end use requirement. 2.2. Design meets all legislative and regulatory requirements. 2.3. Design concept is verified in accordance with standard operating procedures. 2.4. Design outcome is produced as per job requirements and may include sketch, drawing, prototype, document, model or finished product.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- obtaining all relevant drawings, job sheets, instructions and specifications
- consulting, where appropriate, relevant personnel as to the design requirements
- inspecting, where appropriate, the object, plant or equipment to which engineering design concepts are to be applied
- determining, where appropriate, design limitations imposed by relevant codes, standards and regulations
- where appropriate, seeking assistance from relevant sources
- verifying the design concept.

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REQUIRED SKILLS AND KNOWLEDGE
• presenting the design object in a form appropriate to the job requirements • reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents • checking and clarifying task related information • planning and sequencing operations • checking for conformance to specifications • undertaking numerical operations, geometry and calculations/formulae within the scope of this unit
Required knowledge
Look for evidence that confirms knowledge of: • design requirements • functional requirements of the design • the material(s) appropriate to the environment in which the object(s) to be designed is to operate • processes to be used in the manufacture of the object(s) • where appropriate, the costs associated with the manufacture of the object(s) • reasons for selecting the chosen design concept • all relevant codes, standards and regulations applying to the object to be designed • the impact of the applicable codes, standards and regulations on the design requirements of the object • sources of expert assistance in the design process • the end use requirements of the design • checks to ensure the design complies with the relevant codes, standards, legislative and regulatory requirements • the procedures for verifying design concepts • the means by which the design concept is to be presented • safe work practices and procedures

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to apply basic engineering design concepts. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with applying basic engineering design concepts or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

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EVIDENCE GUIDE	
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

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Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

Competency field

Competency field	Drawing, drafting and design

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MEM30001A Use computer aided drafting systems to produce basic engineering drawings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers producing basic engineering drawings using a CAD system, under the direction of a supervisor.

Application of the Unit

Application of the unit	This unit applies to the production of drawings according to defined parameters and predetermined specifications that include materials, tolerances, codes and other specifications. All work is conducted under supervision. Standard CAD software would be used including inbuilt file management, macros and reports. Drawings include plans, diagrams, charts, circuits, systems or schematics. If basic engineering drawings are required, then Unit MEM30002A (Produce basic engineering graphics) should be selected. If detailed engineering drawings are required, then Unit MEM30003A (Produce detailed engineering drawings) should be selected. **Band**: **0** **Unit Weight**: **0**

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units		
Path 1	MEM16006A	Organise and communicate information
	MEM16008A	Interact with computing technology

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare the CAD environment	1.1. All relevant manuals, instructions and operating procedures for the CAD software are obtained in accordance with workplace procedures. 1.2. The CAD package is booted up in accordance with workplace procedures. 1.3. Screen display areas and basic parameters are set in accordance with instructions.
2. Produce a basic drawing	2.1. Basic CAD drawings are created and guidance is sought as required. 2.2. Drawings are prepared in accordance with AS 1100 or equivalent or in accordance with standard operating procedures. 2.3. As required, CAD drawings are reviewed with supervisor and/or other designated staff in accordance with company procedures.
3. Modify existing CAD drawings	3.1. Existing CAD drawings are located and modified by adding, deleting or changing drawing elements within that drawing.
4. Produce output	4.1. Drawing files are saved in the appropriate format in accordance with standard operating procedures. 4.2. Drawing files are printed out using plotter or equivalent devices.
5. Perform exit and shut-down procedures	5.1. Programs and computer are shut down in accordance with workplace procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • reading and interpreting engineering specifications • organising information • using computer and peripherals

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REQUIRED SKILLS AND KNOWLEDGE
• using CAD program • preparing simple drawings in plane orthogonal, isometric projection or equivalent
Required knowledge
Look for evidence that confirms knowledge of: • CAD program capabilities and processes

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to use computer aided drafting systems to produce basic engineering drawings. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with producing basic engineering drawings using computer aided drafting systems, or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes,

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EVIDENCE GUIDE	
	standards, manuals and reference materials.
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Basic parameters	Include layer or level, line type, line width, colour and text format etc.
Basic CAD drawings	Include the following characteristics: lines, arcs, circles, polygons, ellipses, hatching or filling of areas, text, dimensions and tangents
Equivalent devices	May include ink jet printers or the like

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

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Competency field

Competency field	Engineering technician

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MEM30002A Produce basic engineering graphics

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers producing drawings or similar graphical representations where the critical dimensions and associated tolerances and design specifications are predetermined.

Application of the Unit

Application of the unit	This unit applies to any of the full range of engineering disciplines. All work is carried out under supervision. Manual drafting or CAD drawing equipment may be used. If CAD skills are required, then Unit MEM30001A (Use computer aided drafting systems to produce basic engineering drawings) and its prerequisites should be selected If additional CAD skills are required, then Unit MEM30004A (Use CAD to create and display 3D models) should also be selected. If fully detailed drawings are required, then Unit MEM30003A (Produce detailed engineering drawings) should be selected. **Band**: **0** **Unit Weight**: **0**

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units		
Path 1	MEM16006A	Organise and communicate information
	MEM16008A	Interact with computing technology

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify drawing requirements	1.1. All relevant job requirements and design specifications are obtained in accordance with workplace procedures. 1.2. Drawing requirements and specifications are identified and interpreted.
2. Prepare assembly, layout and general drawings in accordance with instructions	2.1. Drawings are prepared in plane orthogonal, isometric projection or equivalent. 2.2. Problems are resolved in consultation with a supervisor.
3. Draw sections through simple engineering components as required for clarity	3.1. Sections are drawn through an engineering component incorporating correct use of cutting plane(s) symbols and conventions.
4. Select physical dimensions from manufacturer handbooks	4.1. Where required, components and/or materials are selected from supplier/manufacturer catalogues using predetermined design specifications.
5. Prepare engineering parts list	5.1. An engineering parts list is produced in accordance with workplace procedures.
6. Issue or file completed drawing/parts list	6.1. Approved drawings and/or parts lists are stored, catalogued and issued in accordance with standard operating procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • correctly using and maintaining equipment including CAD • manual drafting, filing and printing • reading and interpreting specifications • communicating

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REQUIRED SKILLS AND KNOWLEDGE
• visualising components • preparing a drawing in plane orthogonal, isometric projection or equivalent
Required knowledge
Look for evidence that confirms knowledge of: • drafting media including cartridge paper, tracing paper, drafting film, plan printing paper • layout conventions • effective use of blank space, location of notes and symbols • sectioning • draw sections through an engineering component incorporating correct use of cutting plane(s) symbols and conventions. • overview of graphical techniques • assembly drawings, explosion drawings • schematics/line drawings, graphs, pictorials

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to produce basic engineering graphics. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with producing basic engineering graphics, or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

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EVIDENCE GUIDE	
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Specifications	May be obtained form design information, customer, ideas, concepts/expectations/requirements, sketches, preliminary layouts
Drawings	Include plans, diagrams, charts
Consultation	May include reference to appropriate personnel including technical supervisors, manufacturers, suppliers, contractors, customers
Engineering parts list	May include part name, description of part, material specification or part number, quantities and other details as required
Issued drawings	Hard copy, photographic, slide or transparency form including presentation as a single drawing and/or with other drawings, support documentation as a package

Unit Sector(s)

Unit sector	

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Co-requisite units

Co-requisite units		

Competency field

Competency field	Engineering technician

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MEM30003A Produce detailed engineering drawings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers producing detailed drawings of engineering components complete with surface texture details and dimensions.

Application of the Unit

Application of the unit	This unit applies to all engineering and manufacturing environments. Work is carried out under supervision. Drawings may be produced with or without the use of computer aided design (CAD) systems. **Band**: **0** **Unit Weight**: **0**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM16006A	Organise and communicate information
	MEM16008A	Interact with computing technology

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Prerequisite units		
	MEM30001A	Use computer aided drafting systems to produce basic engineering drawings
	MEM30002A	Produce basic engineering graphics

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine drawing requirements	1.1. Drawing requirements are checked and interpreted from work order or similar. 1.2. Required information is sourced from workshop manuals, customer specifications, product suppliers, designers or similar. 1.3. Scope of drawing including layout, additional required information and resources is planned.
2. Produce detail drawings in third angle projection, including auxiliary views, sections and assemblies	2.1. Drawing details including assembly and components are completed as per AS 1100 or similar. 2.2. Dimensions of various components are determined and inserted where required. 2.3. Appropriate symbols for limits and fits, surface texture and geometric tolerances are included. 2.4. Simple components or layouts are drawn in third angle projection. 2.5. An auxiliary view is drawn of a component, given two views. 2.6. Correct convention for parts is shown.
3. Issue and/or file drawing	3.1. Drawing is issued and/or filed according to workplace procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • drawing • documenting • applying principles of geometric tolerances • identifying functional surfaces and datums on assembly drawings • producing detail drawings of machine components and dimension from datums
Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE
Look for evidence that confirms knowledge of: • projection • auxiliary views, special attention • detail drawing methods • standard engineering drawing symbols, references and terminology • projection lines • arrangements • general tolerancing • limits and fits • shaft and hole basis • extremes of fit • surface texture • selection of standard roughness values for given processes • application of surface finish symbols to drawings • selection and application of equivalent surface roughness numbers • geometric tolerancing • simple geometry tolerancing (no datum references, flatness, roundness etc.) • geometry tolerance with datum reference (e.g. parallel squareness)

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to produce detailed engineering drawings. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, i.e. the candidate is not in productive work, an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with producing detailed engineering drawings, or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

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EVIDENCE GUIDE	
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Geometric tolerances	• Simple geometry tolerancing (no datum references, flatness, roundness etc.) • Geometry tolerance with datum reference (e.g. parallel squareness)
Simple components or layouts	May include fabricated components, machined components, cast and forged components, structural details, electrical electronic components, fluid power components
Parts	• Mechanical components such as fasteners, bearings, seals, gears, keys, splines etc. • Electrical components such as cables, connectors, terminations etc. • Fluid power components such as actuators, valves, hoses, connectors, relays etc.

Unit Sector(s)

Unit sector	

Co-requisite units

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Co-requisite units		

Competency field

Competency field	Engineering technician

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MEM30004A Use CAD to create and display 3D models

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers using a CAD program to produce and plot basic three dimensional view drawings.

Application of the Unit

Application of the unit	This unit applies to the production of three dimensional models using computer aided design and drawing software and associated equipment. This will include the use of region and solid modelling techniques, section views, and pre-drawn library files. Work also includes extraction of properties and application of basic rendering techniques. All work is conducted under supervision. **Band**: **0** **Unit Weight**: **0**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM16006A	Organise and communicate information
	MEM16008A	Interact with computing technology

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Prerequisite units		
	MEM30001A	Use computer aided drafting systems to produce basic engineering drawings

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Set up a three dimensional environment	1.1. Set up a three dimensional environment on the screen to allow multiple viewing.
2. Create three dimensional views	2.1. Three dimensional views are created on the screen by manipulation of drawing planes and insertion of three dimensional geometric shapes. 2.2. Any plane of the three dimensional view is drawn on. 2.3. Editing functions are used to modify three dimensional geometric shapes in creating three dimensional views.
3. Display three dimensional views	3.1. Wire line, surface and solid face displays are produced in isometric, perspective and orthographic projections.
4. Extract mass and area properties of a 3D model	4.1. The mass and surface area of a given solid model made from a nominated material is extracted.
5. Apply basic rendering techniques to a 3D model	5.1. A solid model is rendered to a specified set of criteria.
6. Save completed drawing file in various formats	6.1. File is saved in an appropriate format to enable retrieval and use in a CAD system. 6.2. File is saved in other formats to enable retrieval in other software applications.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • reading and interpreting engineering specifications • organising information • using computer and peripherals

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REQUIRED SKILLS AND KNOWLEDGE
• using CAD program • saving 3D modes in various file formats • preparing drawings in plane orthogonal, isometric projection or equivalent
Required knowledge
Look for evidence that confirms knowledge of: • region modelling techniques. • solid modelling techniques • development of sectioned models • use of cutting plane • use of cross hatching • use of pre-drawn library files and primitives to produce a 3D model • use of third level software to produce 3D models • how to extract mass and area properties • how to extract area properties from region models • application of basic rendering techniques to a 3D model

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to use CAD to create and display 3D models. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with using CAD to create and display 3D models or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

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EVIDENCE GUIDE	
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Multiple viewing	Includes top views, front and side views, and a general three dimensional view
Three dimensional geometric shapes	May include arcs and lines, spheres, cones, cylinders and boxes

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

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Competency field

Competency field	Engineering technician

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MSAPMPER200C Work in accordance with an issued permit

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor	This unit aims to ensure that people working under a permit to work understand the system, know the limitations of the permit under which they are working and comply with all the requirements of the permit. The people to whom this unit applies may be called 'permit recipients' or 'permit holders' by some organisations. Some organisations call 'permits' 'clearances' This unit covers the basic competency of working under a permit. Where entry to a confined space is required, then *MSAPMPER205B Enter confined space* is also required. The safety observer (standby person) competencies are covered by *MSAPMPER202A Observe permit work*. Atmospheric testing is covered by *MSAPMOHS217A Gas test atmospheres*. The issuing of permits is covered by *MSAPMPER300B Issue work permits*.

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Application of the Unit

Application of the unit	This competency applies to persons who are required to conduct work activities under the authority of an issued permit to work and within the context and requirements of that permit. This typically applies to all work done by maintenance staff and contractors, and also to any other non-process work performed on the plant. It includes: • identifying the range and scope of work covered by the permit • checking that the right type of permit has been issued for the type of work • adequately preparing to undertake the work, including obtaining all necessary safety equipment and PPE • undertaking the work strictly in accordance with the provisions of the permit • maintaining correct housekeeping with permit activities • completing work in accordance with the permit requirements • querying or raising matters about the permit if the scope of work/nature of the tools to be used varies from that covered by the permit • handing back the permit in accordance with procedures and obtaining appropriate sign off as required.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Pre-requisite Units		

Employability Skills Information

Employability Skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Not applicable.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply for permit(s)	1.1. Confirm the scope and location of the work to be done 1.2. Identify the need for a work permit(s) for the work to be carried out. 1.3. Identify the type of work permit required. 1.4. Collate information required for the issue of the permit 1.5. Apply for the permit following the organisations requirements
2. Identify the scope of the permit.	2.1. Check that work to be done complies with the permit type. 2.2. Check that the scope and location of work comply with the permit issued 2.3. Check that the hazard controls specified on the permit are consistent with the hazard analysis 2.4. Check that preparations specified on the permit have been completed 2.5. Sign onto/receive the permit.
3. Prepare for permitted work.	3.1. Maintain safe working conditions and environment by using available isolation procedures, safety equipment and emergency procedures. 3.2. Monitor plant conditions and hazards to ensure work under the permit remains safe. 3.3. Ensure that appropriate safety equipment and clothing are selected and worn as required by the permit and relevant procedures. 3.4. Inspect work area to ensure safety and compliance with permit requirements and procedures.
4. Work in accordance with an issued permit.	4.1. Use required hazard reduction/control measures. 4.2. Comply with requirements of the permit including safety observer if required. 4.3. Display issued permit on work site as required 4.4. Ensure compliance with scope, location and timeframe specified in the permit or seek re-authorisation as required 4.5. Suspend job and make work site safe before leaving job. 4.6. Formally seek and receive authorised extensions to the permit when required. 4.7. Give end of day status report to permit issuer.
5. Complete permit(s) to work.	5.1. Obtain new permit(s) or have existing permit(s) revalidated before work is recommenced. 5.2. Check the work conducted against the issued permit(s) to ensure that all the nominated work requirements have been

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ELEMENT	PERFORMANCE CRITERIA
	satisfied. 5.3. Monitor general housekeeping to ensure that the site has been left in a clean and safe condition. 5.4. Ensure personal lockouts/tag outs/isolations are removed in accordance with procedures 5.5. Communicate status of the work conducted and the results of the permit to relevant personnel. 5.6. Complete documentation as required and have permit signed off when job is completed.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills:
Competence includes the ability to: • access and interpret information relevant to specific tasks (eg labels, MSDSs hazchem signs) • identify changes to conditions which may lead to the permit being revoked before the job is completed • describe and/or explain hazards associated with tasks covered by the permit, types of tests required for the issue of work permits - the types of tests to include, atmospheric/oxygen/breathability, flammability/explosivity, toxicity/TWA, temperature, humidity • the impact of the regulatory framework and organisation procedures under which the permit operates upon the particular job(s) requiring the permit. Language, literacy and numeracy requirements • This unit may require the ability to read and correctly interpret complex P&ID's; speak clearly and unambiguously in English; and to explain, describe and verify sometimes complex needs and issues. • Writing is required to the level of completing workplace forms. • Numeracy is required to the level of being able to correctly differentiate between high and low pressures and temperatures, voltages or masses.
Required knowledge:
Knowledge and understanding of the relevant OHS and environmental requirements, in particular those relating to various situations requiring work permits, with an ability to implement the requirements in a manner that is relevant to the job. Knowledge of the organisation's standard procedures and work instructions and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and in a manner relevant to the job. Sufficient knowledge of all types of permits is required to ensure work is not carried out without the correct permit. This includes recognizing hot work and confined spaces. Knowledge of regulatory frameworks should include: • licence requirements for the job, • company policy and procedures • permit control systems

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Evidence Guide

EVIDENCE GUIDE
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment	Assessment of this unit should demonstrate competence on actual plant and equipment in a work environment The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Simulation may be required to allow for assessment of parts of this unit. Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to distinguish between situations requiring the types of permit and to list the major requirements of each type of permit. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to: • provide reasons for a permit system • recognise the importance of different work permits • comply with permit conditions including the wearing of appropriate personal protective equipment (PPE) • take appropriate action to resolve faults or report faults to appropriate personnel • explain and implement incident response procedures. Consistent performance should be demonstrated, e.g. look to see that: • communications are timely and effective • deviations from permit conditions are recognised, reported, corrected and re-authorization arranged • actions specified in the permit/standard procedures are carried out • all safety procedures are followed.
Context of and specific resources	A holistic approach should be taken to the assessment.

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EVIDENCE GUIDE	
for assessment	Assessment will occur over a range of situations which may include disruptions to normal, smooth operation. Competence in this unit may be assessed: • on a plant/in the work place/a work situation • by using a suitable simulation based on the actual plant and including walk throughs of the relevant competency components and/or a range of case studies/scenarios and role plays • by questioning and using 'what if' scenarios both on the plant (during demonstration of normal operations and walk throughs of abnormal operations) and off the plant • through a combination of these techniques. These aspects may be best assessed using a range of simulations/scenarios/case studies and 'what ifs' as the stimulus with a walk through forming part of the response. These assessment activities should cover a range of problems, including new or unusual situations which may have been generated from the past incident history of the plant, incidents on similar plants around the world, hazard analysis activities and similar sources. In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment. Assessors need to be aware of any cultural issues that may affect responses to questions. Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed. In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. While oral assessments may be appropriate there needs to be a written record for audit purposes. This section should be read in conjunction with the Range Statement for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions which will be used to probe the reasoning behind the observable actions will also be required to the extent that they form part of the assessment method.

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EVIDENCE GUIDE	
	Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.
Method of assessment	Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed and the safety standard required.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version/version specified by the local regulatory authority must be used.
Context	This unit typically applies to all work done by maintenance staff and contractors, and also to any other non-process work performed on the plant. All work is to be conducted using the appropriate personal protective equipment. The types of work permits may include: • cold work/general permit to work • excavation • hot work • vehicle entry • minor repairs • working at heights • other special permits. Note that entry to a confined space is covered by *MSAPMPER205C Enter confined space*. The Australian Standard (*AS2865*) definition given for confined space entry is used in this Training Package. All operations are performed in accordance with standard operating procedures (SOPs). Checks to ensure a workplace is safe may include: • process isolations complete • mechanical and electrical isolations in place • atmospheric testing complete and atmosphere safe. If it is not safe and cannot be made safe, then appropriate measures are implemented as per SOPs. • relevant personnel informed of work and agree that it is safe and appropriate to proceed.
Procedures	All operations are performed in accordance with procedures. Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards. These may include:

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RANGE STATEMENT	
	• legislation/codes • OHS legislation, codes of practice and guidance material • EPA • National and Australian standards • licence and certification requirements • internal permit control system. • process isolations complete • mechanical and electrical isolations in place • atmospheric testing complete and atmosphere safe. If it is not safe and cannot be made safe, then appropriate measures are implemented as per SOPs. • relevant personnel informed of work and agree that it is safe and appropriate to proceed.
Information required for permit	Information required for a permit includes: • work description • tools to be used • process/methods of work/SOPs • MSDSs • JHA/JSA/SWMSs
Tools and equipment	This competency includes use of safety equipment and tools such as: • eye protection (eg goggles) • ear protection • gloves • clothing • respiratory protection • helmets • safety footwear.
Hazards	Typical hazards include: • heat, smoke, dust or other atmospheric hazards • sharp edges, protrusions or obstructions • limited head spaces or overhangs • equipment or product mass • slippery surfaces, spills or leaks • noise, rotational equipment or vibration.
Display issued permit	Display issued permit on work site means to have the permit on the worksite and displayed/ready to be shown as required by the site/job requirements and may include: • displaying it in a provided mounting

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RANGE STATEMENT	
	• having it accessible in a folder which is on the work site • having it folded in overall pockets in a manner which allows it to be readily shown on request.
Problems	'Respond to routine problems' means 'apply known solutions to a limited range of predictable problems'. Typical problems may include: • provision of the wrong permit • incorrect information being supplied with the permit • errors being made in the understanding of permit data • failure to correctly correspond to the requirements of the permit • failure to seek clarification when anomalies occur.
Variables	Key variables to be monitored include: • sites under which permit activities must be applied • type of permit to be executed • types of tools and equipment to be employed • size of work team • scope and urgency of work.
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit Sector	

Competency field

Competency Field	

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Co-requisite units

Co-requisite Units		

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MSAPMPER300C Issue work permits

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor	This competency unit addresses the need for personnel who issue work permits to understand the permit system, know the limitations of each permit and make decisions regarding the need for and correct use of each permit. This competency unit includes the issue of any and all permits. It applies to the issuing of permits covering a single plant or plant area such as might be an operators scope of responsibility.

Application of the Unit

Application of the unit	This competency applies to personnel who are required to issues appropriate permits to work to persons conducting a variety of activities in workplace environments in which hazards exist or specific procedures need to followed and monitored to protect the safety of personnel and the integrity of plant or process. It includes: • reviewing the conditions under which the work will be undertaken • examining the site to determining the hazards and safety requirements applicable to the site • ensuring the appropriate permit(s) is (are) selected depending on the organisations procedures • determining the appropriate conditions for the permit(s) • raising, authorising and issuing the necessary permit(s) • monitoring compliance with the permit conditions • reporting any indiscretions or violations of permit conditions and where necessary revoking permits • managing the permit process especially in shift hand overs or extensions to work activities • withdrawing and signing off work permits on completion of the work and verification that the requirements of the permit have been complied with.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Pre-requisite Units	*RIIRIS201A*	*Conduct local risk control*

Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not applicable.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify need for work permit	1.1. Understand work permit system. 1.2. Identify and confirm with appropriate personnel the need for work permit. 1.3. Identify the correct permit for each situation.
2. Prepare work site for authorised work	2.1. Undertake an inspection of the work site. 2.2. Identify OHS and environmental requirements. 2.3. Conduct hazard identification and risk assessment. 2.4. Ensure work site is prepared in accordance specified work permit conditions. 2.5. Check permit conditions and report to appropriate personnel. 2.6. Identify need for and carry out testing in accordance with standard operating procedures.
3. Raise and issue work permits	3.1. Ensure conditions are documented on permit. 3.2. Ensure appropriate testing carried out and results documented on permit. 3.3. Determine an appropriate validity period 3.4. Check that permit conditions are met (ie validate permit). 3.5. Complete and authorise permit. 3.6. Ensure recipient(s) is advised of and agrees to abide by the requirements of the permit(s). 3.7. Ensure recipient(s) signs permit(s).
4. Monitor work for compliance	4.1. Undertake regular site inspections. 4.2. Monitor conditions and work progress and respond appropriately to changing conditions and circumstances. 4.3. Ensure permit currency and revalidate as required. 4.4. Ensure permit is displayed in prominent position. 4.5. Identify and, act on incidences of non-compliance and report promptly to relevant personnel. 4.6. Report any issues which arise with regard to work under the permit in accordance with procedures.
5. Receive end of day report	5.1. Receive end of day report from permit recipients 5.2. Confirm job progress and status. 5.3. Revalidate/arrange for revalidation of permit as required 5.4. Confirm work area has been left safe 5.5. Handover ongoing permits and status of suspended permits to oncoming shift.

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ELEMENT	PERFORMANCE CRITERIA
6. Close work permit	6.1. Inspect job status. 6.2. Check that work undertaken satisfies permit conditions. 6.3. Ensure that work site is ready for a safe return to working conditions. 6.4. Check required returns to work status have been completed. 6.5. Sign off documentation and close permit in accordance with standard operating procedures. 6.6. Communicate work site and process status to relevant personnel.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills:

Competence includes the ability to select, apply and/or explain:

- appropriate PPE
- Australian Standard AS2865 -Confined Space
- Australian Standard AS1674.1 Safety in welding and allied processes (covers all hotn work)
- types of permits and what they cover
- hazards associated with each type of permit
- permit control system
- hazards of the area for which permit is being issued
- hazards that may be created by the interactions of the permit, the process and the plant area
- identification of container and goods coding and HAZCHEM markings
- production workflow sequences
- focus of operation of work systems and equipment
- application of relevant agreements, codes of practice and other legislative requirements
- methods of hazard analysis
- hazards of the materials and process and appropriate hazard control procedures, including hierarchy of control
- identification and correct use of equipment, processes and procedures
- selecting appropriate tests and knowing what the tests are for
- conducting and interpreting tests for contaminant gases and other hazards
- testing - types of testing may include:
  - atmospheric, including explosivity, O_2
  - flammability
  - toxicity
  - temperature
  - humidity
  - combustibles' oxygen, enriched or reduced
- estimating ventilation required for making vessels safe (eg for confined space entry, hot work)y including applying the formula for factors such as:
  - space turnover rate,
  - number of turnovers
- challenging/checking performance of monitoring and testing equipment against a standard sample
- supervision/monitoring of contractors.

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REQUIRED SKILLS AND KNOWLEDGE
Some sources of underpinning OHS knowledge include appropriate OHS and Dangerous Goods legislation, Australian Standards and Safework Australia, State or Territory codes such as: • NOHSC:1010 - National Standard for Plant • AS4024.1 Safeguarding of machinery - general principles • NOHSC: 1003 National exposure standards for atmospheric contaminants in the occupational environment. The regulatory framework to include: • OHS • EPA • OHS authorities and Safework Australia • licence and certification requirements • company policy and permit control systems • other relevant standards. This unit requires the ability to: • read and correctly interpret complex P&IDs • speak clearly and unambiguously in English • explain, describe and verify sometimes complex needs and issues.
Required knowledge:
Knowledge and understanding of the materials, equipment and process sufficient to recognise situations requiring different types of work permits and then implement the appropriate action. Knowledge of the organisation's standard procedures and work instructions and relevant regulatory requirements under which permit systems operate, along with the ability to implement them within appropriate time constraints and in a manner relevant to the job. Knowledge of the relevant requirements under AS2865. Writing is required to the level of completing workplace forms and producing reports. Numeracy is required to the level of being able to correctly differentiate between high and low pressures and temperatures, voltages or masses.

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Evidence Guide

EVIDENCE GUIDE
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment	Assessment of this unit should demonstrate competence on actual plant and equipment in a work environment.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to distinguish between situations requiring the major types of permits and to list the major requirements of each type of permit. It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to: • correctly identify situations requiring work permits • identify and apply legislative requirements, relevant standards and codes of practice (which may be incorporated in the organisation's procedures) to the issuing of work permits • list the requirements of each type of permit • plan own work process within workplace procedures and explain the reasons for the steps in the process. Consistent performance should be demonstrated. For example, look to see that: • correct permit issued • hazards are identified and controlled in the permit by applying the hierarchy of control • required personal protective equipment (PPE) is specified • problems are anticipated • problems are efficiently resolved. These aspects may be best assessed using a range of scenarios/case studies/what ifs as the stimulus with a walk through forming part of the response. These assessment activities should include a range of problems, including new or unusual situations which may have been generated from the past incident history of the plant, incidents on similar plants around

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EVIDENCE GUIDE	
	the world, hazard analysis activities and similar sources.
Context of and specific resources for assessment	Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge. A holistic approach should be taken to the assessment. Competence in this unit may be assessed: • by use of a suitable simulation and/or a range of case studies/scenarios. Simulations should be based on the actual plant and will include walk throughs of the relevant competency components • through questioning and the use of "what if" scenarios both on the plant and off the plant. • by a combination of these techniques. In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment. Assessors need to be aware of any cultural issues that may affect responses to questions. Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed. This section should be read in conjunction with the Range Statement for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.
Method of assessment	Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.

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EVIDENCE GUIDE	
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performedand the safety standard required.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version/version specified by the local regulatory authority must be used.
Context	This competency covers the issue of any and all work permits. Permits are called clearances by some organisations. The types of permit include: • cold work • excavation • vehicle entry • minor repairs • working at heights • hot work • confined space • electrical • increased hazard • other relevant permits. Requirements identified on the permit may include testing of atmospheric conditions, ventilation and control measures such as isolation, barriers, tag out/lockout signs, communications, incident response. A 'competent person' is a person who has, through a combination of training, education or experience, acquired knowledge and skills enabling that person to correctly perform a specified task. Safety structures and controls may include automatic plant shut down buttons, cords/lanyards, alarms, barriers, guards, earth leakage devices, tag out/lock out procedures, warning lights.
The work permit system	The work permit system includes: • types of permits • legislative/regulatory/standards framework • roles and responsibilities of parties under the permit system • equipment which can and cannot be used for types of permit • alternative ways of conducting a job
Confined space	The Australian standard (AS2865-2009) definition given for confined

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RANGE STATEMENT	
	space is used in this Training Package, i.e.: 'An enclosed or partially enclosed space that is not intended or designed primarily for human occupancy, within which there is a risk of one or more of the following: (a) An oxygen concentration outside the safe oxygen range. (b) A concentration of airborne contaminant that may cause impairment, loss of consciousness or asphyxiation. (c) A concentration of flammable airborne contaminant that may cause injury from fire or explosion. (d) Engulfment in a stored free-flowing solid or a rising level of liquid that may cause suffocation or drowning.'
Procedures	All operations are performed in accordance with procedures. Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards. These may include: • OHS • EPA • OHS authorities and AASCC • Australian Standards • licence requirements • company policy and permit control systems • other relevant standards.
Preparation	Preparation of work site includes: • mechanical, electrical and other energy sources, and process isolations • de-energising all sources of energy/pressure • purging of lines • lock out/tag out procedures • blinding/blanking lines.
Tools and equipment	This competency includes use of equipment and tools such as: • writing instruments • computers and printers • calculators • testing equipment.
Hazards	Typical hazards include: • unsafe conditions developing through failure to conform with the provisions of the permit • injuries to personnel

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RANGE STATEMENT	
	• equipment failures • releases of toxic or noxious substances.
Returns to work status	Returns to work status may include: • de-isolation • removal of lockouts/tag outs • removal of drain covers • etc.
Problems	Anticipate and solve problems means resolve a wide range of routine and non-routine problems, using product and process knowledge to develop solutions to problems which do not have a known solution/ a solution recorded in the procedures. Typical process and product problems may include: • selection of the wrong permit • incorrect information being supplied with the permit • errors being made in the completion of permit data • failure to correctly correspond to the requirements of the permit • failure to seek clarification when anomalies occur.
Variables	Key variables to be monitored include: • types of permits being issued • permit issuing procedures • permit protocols for extended work activities beyond the end of shift • permit hand-over procedures.
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit Sector	

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Competency field

Competency Field	

Co-requisite units

Co-requisite Units		

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MSAPMSUP101A Clean workplace or equipment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor
This competency covers general housekeeping duties, as well as the cleaning of plant and equipment. This competency is typically demonstrated by all operators working either independently or as part of a work team.

Application of the Unit

Application of this unit
This competency applies to personnel who are required to keep the work area, plant and equipment clean and tidy. The key factors are the identification, scheduling and performance of housekeeping requirements. This may include:

- identifying the range and scope of work required
- checking if any type of permit has been issued for the work
- knowing site safety and housekeeping standards
- adequately preparing to undertake the work, including obtaining all necessary safety equipment and PPE
- scheduling housekeeping duties
- handling chemicals and solvents safely
- keeping assigned plant and equipment clean.
- undertaking the work strictly in accordance with the provisions of any permit
- completing work in accordance with requirements
- moving work and waste materials to designated locations
- querying or raising matters about the scope of work if it varies from that normally undertaken
- completing the work in accordance with procedures and obtaining appropriate sign off as required.
-

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisites
This unit has **no** prerequisites.

Employability Skills Information

Employability Skills
This unit contains employability skills.

Elements and Performance Criteria Pre-Content

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency	Performance criteria describe the required performance needed to demonstrate achievement of the Element. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT ELEMENT	PERFORMANCE CRITERIA Performance criteria describe the required performance needed to demonstrate achievement of the Element. Assessment of performance is to be consistent with the Evidence Guide.
1. Identify housekeeping requirements.	1.1 Explain and understand site safety and housekeeping standards. 1.2 Undertake housekeeping inspection in accordance with procedures/work instructions. 1.3 Identify and schedule housekeeping requirements as appropriate.
2. Perform general housekeeping duties.	2.1 Keep designated work areas clean to organisation specific standards. 2.2 Keep designated work areas clear of obstructions. 2.3 Handle and use chemicals and solvents as per the manufacturer guidelines and company specifications. 2.4 Ensure work area is ready for next user. 2.5 Remove work materials to designated locations.
3. Clean plant and equipment.	3.1 Keep assigned plant and equipment clean following established organisation procedures. 3.2 Perform specialised cleaning procedures as required. 3.3 Ensure that appropriate personal protective equipment is used as required.
4. Dispose of waste materials.	4.1 Correctly identify waste materials. 4.2 Remove waste materials to a designated location.

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Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit.
Knowledge and understanding of the process sufficient to recognise non-standard situations and then determine an appropriate action which is consistent with operating guidelines.
Knowledge of organisation standard procedures and work instructions and relevant regulatory requirements, along with the ability to implement them within appropriate time constraints and in a manner relevant to the operation of the process.
Competence includes the ability to:

- apply and describe:
- duty of care
- requirements for housekeeping process
- procedures for plant maintenance
- safe handling procedures
- the standard of cleanliness required.
- distinguish between:
- re-usable materials and waste
- routine and special cleaning needs.
- plan own work, including predicting consequences and identifying improvements
- use PPE
- safely handle products and materials
- read relevant safety information and apply safety precautions appropriate to the task/ relevant to the practical operation of the process.

Language, **literacy and numeracy requirements**
This unit requires the ability to read and interpret typical product specifications, job sheets and material labels as provided to operators.
Writing is required to the level of completing workplace forms.
Basic numeracy is required, e.g. to determine that two 25 kg bags are needed to make up a requirement for 50 kg.

Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required skills and knowledge, the Range Statement and the Assessment Guidelines for this Training Package.
Overview of assessment
A holistic approach should be taken to the assessment.
Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.
Critical aspects for assessment and evidence required to demonstrate competency in this unit
It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action.

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Consistent performance should be demonstrated. For example, look to see that:

- early warning signs for work areas in need of cleaning are recognised
- work areas are kept tidy and clean
- equipment and/or materials is/are neatly stored, in a safe manner, in the correct location at all times when not in use
- equipment is always tidy and safe when in use.

Assessment method and context
Assessment will occur using industrial equipment and will be undertaken in a work-like environment.
Competence in this unit may be assessed:

- in the operation of all ancillary equipment to the level required for this competency unit
- by using a suitable simulation and/or a range of case studies/scenarios
- through a combination of these techniques.

In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment. Assessors need to be aware of any cultural issues that may affect responses to questions.
Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.
Specific resources for assessment
This section should be read in conjunction with the Range Statement for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.
Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.

Range Statement

RANGE STATEMENT
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts. Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context
This competency unit may vary between organisations depending upon a range of practices and procedures, with consideration given to plant configuration and process.
Procedures
All operations are performed in accordance with procedures.

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Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Tools and equipment

This competency includes use of equipment and tools such as:

- cleaning equipment and materials
- brooms
- shovels
- solvents
- waste containers
- safety equipment.

Hazards

Typical hazards include:

- materials or equipment obstructing work areas
- heat, smoke, dust or other atmospheric hazards
- sharp edges, protrusions or obstructions
- limited head spaces or overhangs
- equipment or product mass
- slippery surfaces, spills or leaks
- noise, rotational equipment or vibration

Problems

'Respond to routine problems' means 'apply known solutions to a limited range of predictable problems'.

Typical process and product problems may include:

- correct equipment not immediately available
- safety issues associated with housekeeping and/or cleaning
- ensuring that process aids rather than interferes with production.

Variables

Key variables to be monitored include:

- housekeeping and/or cleaning methods and procedures
- the type of tools and equipment used in special situations
- the use of personal protective equipment.
- correct use of tools
- waste collection and disposal
- conformance with frequency and quality of organisational reporting requirements
-

Unit Sector(s)

Not applicable.

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MSL913002A Plan and conduct laboratory/field work

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to plan and complete tasks individually or in a team context. The tasks involve established routines and procedures using allocated resources with access to readily available guidelines and advice. Work plans may need to be modified with supervisor agreement to suit changing conditions and priorities.

Application of the Unit

Application of the unit	This unit of competency is applicable to instrument operators, laboratory assistants and technical assistants working in all industry sectors. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and organise daily work activities	1.1. Clarify allocated work activities and required resources if necessary 1.2. Prioritise work activities as directed 1.3. Break down work activities into small achievable components and efficient sequences 1.4. Review work plan in response to new information, urgent requests, changed situations or instructions from appropriate personnel 1.5. Update work plan and communicate changes to appropriate personnel
2. Complete allocated work	2.1. Locate relevant workplace procedures for required tasks 2.2. Undertake tasks following prescribed and routine work related sequences 2.3. Seek assistance from relevant personnel when difficulties cannot be handled 2.4. Record completion of activities to confirm outputs in accordance with plan
3. Identify and resolve work problems	3.1. Recognise problems or opportunities for improved work performance 3.2. Apply agreed problem solving strategies to consider possible causes and solutions 3.3. Identify and access appropriate sources of help 3.4. Consider available alternatives and keep them open before agreeing on the most appropriate action
4. Work in a team environment	4.1. Cooperate with team members to negotiate and achieve agreed outcomes, timelines and priorities 4.2. Recognise personal abilities and limitations when undertaking team tasks 4.3. Confirm personal role and responsibility within the team for particular outputs 4.4. Demonstrate sensitivity to the diversity of other team members' backgrounds and beliefs
5. Update knowledge and skills as required	5.1. Recognise own strengths and weaknesses and take advantage of skill development opportunities

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- conducting work based on ethical values and principles
- clarifying tasks and recognising resource needs
- following relevant procedures consistently
- recognising potential disruptions or changed circumstances and modifying work plan in conjunction with relevant personnel
- ability to adjust to a variety of working environments (indoor, outdoor and night)
- seeking assistance from relevant personnel when difficulties arise
- achieving quality outcomes within timelines
- working effectively with team members who may have diverse work styles, cultures and perspectives
- promoting cooperation and good relations in the team
- assisting team members to organise and manage its workload

Required knowledge

Required knowledge includes:

- enterprise procedures:
  - customer service
  - quality
  - occupational health and safety (OHS) and environmental legislative requirements
  - technical work that the candidate routinely performs
- workplace agreements and employment conditions:
  - workers compensation
  - industrial awards enterprise agreements
  - equal employment opportunity
  - anti-discrimination and anti-harassment
- ethical background relevant to the nature of the work:
  - use of animals for research
  - genetic modification, gene therapy, cloning and stem cells
  - invitro fertilisation
  - forensic testing of populations
  - importance of commercial confidentiality
- problem solving strategies

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REQUIRED SKILLS AND KNOWLEDGE
• interpersonal communication and conflict resolution techniques • relevant health, safety and environment requirements

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • follow workplace procedures to achieve quality outcomes within timelines • identify and resolve work problems • work effectively with team members and promote cooperation and good relations • prioritise activities and recognise potential disruptions or changed circumstances and modify the work plan in conjunction with relevant personnel.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL913001A Communicate with other people* • *MSL943002A Participate in laboratory/field workplace safety* • technical units related to the tasks undertaken. Resources may include: • enterprise procedures, equipment and materials for relevant technical tasks.
Method of assessment	The following assessment methods are suggested: • review of a flowchart prepared by the candidate to show efficient sequencing of tasks • observation of the candidate performing a range of technical tasks over sufficient time to demonstrate their handling of a variety of contingencies • review of documents detailing completed tasks, such as completed job cards, a report or suggestions for quality improvement • feedback from peers and team members • feedback from supervisors • written or oral questions to partly assess the candidate's ability to handle a range of contingencies and work in a team environment.

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EVIDENCE GUIDE	
	In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and show its relevance in a workplace setting. **Manufacturing** A plastic processing plant had to halt production because of a suspect raw material. The plant manager immediately requested the polymer testing laboratory to test and identify all batches of polypropylene additives and colouring agents. The laboratory team of three assistants and one technical officer allocated the workload amongst themselves to conduct the twelve different tests within a period of four hours to identify the 'out of specification' materials and report them to the production supervisor. All laboratory assistants had to reschedule their workplan, perform the required tests and assist each other to solve the production problem. **Biomedical** As part of a routine sequence, a technical officer is required to perform a series of tasks, including the calibration of instruments required for testing of blood samples. These tasks are to be completed within a specified timeframe to meet the output requirements of the enterprise. During the calibration of one of the instruments, the technician experiences difficulties that require expert technical assistance. The problem is referred to the appropriate person and is quickly resolved. Consequently, the officer is able to complete all

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EVIDENCE GUIDE	
	necessary tasks within the prescribed timeframe and the required output is maintained. **Food processing** Each of the technical assistants working in the laboratory of a food processing company was dedicated to performing specific analyses. As a result, they often alternated between periods of inactivity and excessive workload (the latter case had the potential to compromise their health and safety and the accuracy of their food analyses). One of the contributing factors to the periods of intense activity was the need to quickly prepare standard solutions and reagents. The team discussed this problem and agreed that while it was not appropriate for each assistant to become competent to perform every analytical procedure, it was feasible for each person to be able to prepare solutions and reagents used by others. The team developed a central register in which impending shortages of these materials was noted. Each assistant referred to this register when no other work was due and prepared the materials on a 'first in, first out' basis unless a task was given a priority rating. The team found that this strategy more evenly distributed the workload over their shift, improved safety in the laboratory and reduced the risk of error.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards such as:
	  • AS/NZS 2243 Set:2006 Safety in laboratories set
	  • AS/NZS ISO 14000 Set:2005 Environmental management standards set
	  • AS/NZS ISO 9000 Set:2008 Quality management systems set
	• OHS national standards and codes of practice

Ethical and professional work performance	Ethical and professional work performance includes: • following enterprise policy and procedures, regulations and legislation • behaving honestly and openly • respecting others and treating them with courtesy and impartiality • working diligently and responsibly • ensuring confidentiality of information, including client identification and test results • ensuring proprietary rights, intellectual property and copyright are protected • clarifying personal values and ethics and analysing how they impinge on actions in the workplace
Workplace activities	Workplace activities may include: • setup and pre-use checks of laboratory equipment • calibration status checks

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RANGE STATEMENT	
	• sampling and testing following standard procedures • maintenance and cleaning tasks
Workplace procedures	Workplace procedures may include: • standard operating procedures (SOPs) • job cards, batch cards and production schedules • job descriptions • methods, recipes, procedures and protocols
Problem solving	Problem solving may include: • accessing relevant documentation • identifying inputs and outputs • sequencing a process • identifying and rectifying a problem step • obtaining timely help • implementing preventative strategies wherever possible
Teams	Teams may: • be ongoing with responsibility for particular services or functions • be project based • have a mixture of full and part-time employees and contractors, laboratory, construction and production personnel • be separated by distance and work at sites outside laboratory facilities
Team operation	Team operation may occur within: • small, medium and large contexts • internal and external environments • enterprise guidelines covering access and equity principles and practices, licensing requirements, industrial awards, enterprise bargaining agreements and codes of practice • agreed responsibility and accountability requirements • appropriate goals, objectives • given resource parameters
Team tasks	Team tasks may vary according to:

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RANGE STATEMENT	
	• the size of enterprise • the scope of the laboratory • their level of responsibility
Strategies to maintain work flow	Strategies to maintain work flow may include: • communicating critical events on shift • recognising shortages in reagents and problems with equipment • communicating quality breakdowns • recognising urgent and abnormal results to be processed • communicating and behaving in a courteous manner • being punctual
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Communication/organisation

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Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MSL916003A Supervise laboratory operations in work/functional area

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers planning, allocation of tasks, coordination, quality assurance, monitoring resource usage and recording and reporting of laboratory operations. This requires using significant judgement about work sequences and choosing appropriate technology and procedures to ensure that products and services meet customer expectations, and are provided safely and efficiently in keeping with the enterprise business plan.

Application of the Unit

Application of the unit	This unit of competency is applicable to senior technical officers and laboratory supervisors working in all industry sectors. Responsibility is undertaken for the day-to-day operation of the functional area under broad direction from more senior staff such as scientists, medical staff and engineers, Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These can be found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Monitor and direct work practices within functional area	1.1. Ensure that personnel follow all relevant procedures, regulations and standards 1.2. Confirm that all technical work is performed in accordance with relevant standards, standard operating procedures (SOPs) and schedules 1.3. Ensure that analytical results/data are checked, collated and distributed in accordance with enterprise requirements 1.4. Monitor testing and sampling procedures for quality control in accordance with enterprise requirements 1.5. Identify and resolve complex problems by using agreed problem solving strategies and act to prevent their recurrence
2. Manage personnel within work area	2.1. Develop and coordinate rosters to balance job requirements, laboratory efficiency and skill development opportunities 2.2. Empower work groups/teams in dealing with technical and work flow problems and suggesting improvements 2.3. Provide coaching and mentoring to support personnel who have difficulties with meeting targets for performance and/or resource usage 2.4. Establish and maintain effective communication with all personnel and clients to ensure smooth and efficient operations
3. Establish resource requirements and operating budgets	3.1. Collect and analyse available resource information in consultation with appropriate personnel 3.2. Prepare operational plans which make the best use of available resources, taking into account client needs and enterprise plans 3.3. Identify and analyse possible variances due to external/internal factors and prepare contingency plans 3.4. Compile operating budgets as required
4. Procure resources to achieve operational plans	4.1. Analyse resource requirements and sources of supply in terms of suitability, cost, quality and availability 4.2. Select and purchase new materials and equipment in accordance with enterprise procedures 4.3. Coordinate stocktaking of materials and equipment

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ELEMENT	PERFORMANCE CRITERIA
	to ensure maintenance of stock at prescribed levels 4.4. Ensure that personnel are competent to perform required tasks and organise training if required 4.5. Arrange for the recruitment and induction of personnel as appropriate
5. Monitor and optimise operational performance and resource usage	5.1. Monitor the relationship between budget and actual performance to foresee problems 5.2. Analyse variations in budget performance and either report or rectify abnormal/sub-optimal performance 5.3. Negotiate with designated personnel and seek approval for variations to operational plans as required 5.4. Assess utilisation of plant, equipment and consumables and compare with planned usage 5.5. Rectify sub-optimal utilisation of plant, equipment and consumables 5.6. Program and arrange for maintenance of plant and equipment in accordance with enterprise maintenance schedules 5.7. Maintain systems, procedures and records associated with resource usage in accordance with enterprise requirements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- collecting, analysing and reportingon information for enterprise operational plans, budgets and performance management
- organising and optimising the use of resources within agreed parameters to achieve planned outcomes
- revising plans to take account of the unexpected
- solving non-routine problems
- making decisions within limits of responsibility and authority
- ensuring that legislation, statutory and enterprise requirements are met in work operations
- monitoring outputs, analyses, processes and introducing ways to improve operations
- using effective consultative processes
- promoting a learning environment for personnel in the immediate work area
- motivating and counselling personnel to improve performance

Required knowledge

Required knowledge includes:

- enterprise:
  - business, strategic and operational plans
  - key performance indicators
  - laboratory services
  - products
  - customers
- legislation, codes, standards and registration criteria relevant to the work area or function
- principles of budgeting, operational planning and efficient resource use
- workplace industrial agreements and regulations dealing with hygiene, dress and behaviour of employees
- SOPs and the technical details of sampling, testing, equipment and instrumentation within the work area
- problem solving techniques and contingency planning
- broad trends in production data (e.g. seasonal and annual)
- auditing procedures
- team leadership and development techniques

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REQUIRED SKILLS AND KNOWLEDGE
• mentoring and coaching techniques • relevant health, safety and environment requirements **Specific industry** Additional knowledge requirements may apply for different industry sectors. For example: Biomedical and environmental: • access information from sources, such as relevant Federal and State/Territory Acts, Environmental Protection Agency (EPA), National Pathology Accreditation Advisory Council (NPAAC) and National Health and Medical Research Council (NHMRC) Food processing: • Codex Alimentarius standards, Association of Analytical Communities International (AOAC International) Official Methods of Analysis

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • collect, analyse and reporton information for enterprise operational plans, budgets and performance management • organise and optimise the use of resources within agreed parameters to achieve planned outcomes • revise plans to take account of the unexpected • make decisions within limits of responsibility and authority • supervise laboratory operations and personnel so that planned outcomes are achieved within agreed resource and budget parameters without compromising safety, quality and ethics • ensure that legislation, statutory and enterprise requirements are met in work operations • monitor outputs, analyses processes and introduce ways to improve operations • solve a range of non-routine problems • use effective consultative processes • promote a learning environment for personnel in immediate work area • motivate and counsel personnel to improve performance.
Context of and specific resources for assessment	This unit of competency should be assessed in a laboratory environment that meets Australian standards for working laboratories or is accredited by NATA or the Royal College of Pathology. The assessment timeframe must allow for adequate assessment over a planning cycle. This unit of competency may be assessed with: • *MSL916002A Manage and develop teams* • *MSL916004A Maintain registration and statutory or legal compliance in work/functional area* • *MSL946001A Implement and monitor OHS and*

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EVIDENCE GUIDE	
	environmental management systems. Resources may include: • laboratory equipped with appropriate services, equipment, instruments and consumables • relevant enterprise policies, procedures, operational reports, financial reports and stock records • technical manuals, SOPs and quality manuals.
Method of assessment	The following assessment methods are suggested: • direct observation of the candidate's interactions with personnel • review of reports from subordinates, peers, managers and customers • review of reports, operational budgets and plans generated by the candidate • review of performance reports for the candidate's work area • review of documented examples of quality performance improvements achieved and examples of significant problems solved • simulations/role plays to assess situations which are critical but did not arise during the negotiated assessment period. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting.

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EVIDENCE GUIDE	
	Manufacturing A laboratory supervisor analysed the costs of regular heavy metal testing of the wastewater stream leaving the company's plant. He/she compared these costs with a quotation from an external environmental consulting company and noted that it would be more cost effective to outsource the current level of testing. However, the supervisor argued that the company should retain this capability in-house given the impact of impending legislation which will require it to develop an environmental management plan and introduce more complex monitoring. He/she demonstrated that it would benefit the company more in the long run if they recruited one new technician, retrained existing laboratory staff and continued to perform all wastewater testing on site. **Food processing** A technical officer had to complete a wide range of chemical analyses that required samples to be ignited for many hours in a muffler furnace, digested with acid, prepared for analysis by atomic absorption spectroscopy and gas chromatography (GC), and titrated against standard solutions. The laboratory supervisor noticed that the number of analyses performed each day by the technician tended to fluctuate widely without an obvious cause. Closer observation showed that the technician's efficiency was dependent on the order in which the analyses were begun and the use of the auto sampler for overnight operation of the GC. The supervisor suggested several ways to improve the technician's time management. The supervisor installed a timer on the muffler furnace so that it could be operated overnight and organised the technician to perform labour intensive tasks after automated analyses had been initiated. The supervisor then showed the technician the optimum order to perform individual tasks and verified that his instructions were followed over succeeding weeks. The supervisor's actions significantly improved the productivity of the laboratory. Later it became obvious that the technician's time management system was not working as effectively as it had. Again, the supervisor monitored the technician's work and realised that since the daily analytical load was seasonal, a second management system had to be developed that was

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EVIDENCE GUIDE	
	dedicated to the new season. Both systems were sufficiently flexible to take account of short term fluctuations in workload. In summary, the organisational skills of the supervisor and technician's ability to follow detailed instructions resulted in a more efficient use of company time, labour and resources.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards such as:
	  • AS ISO 17025-2005 General requirements for the competence of testing and calibration laboratories
	  • AS/NZS 2243 Set:2006 Safety in laboratories set
	  • AS/NZS ISO 14000 Set:2005 Environmental management standards set
	  • AS/NZS ISO 9000 Set:2008 Quality management systems set
	• Australia New Zealand Food Standards (ANZFS) Code
	• Australian code of good manufacturing practice for medicinal products (GMP)
	• Australian Dangerous Goods Code
	• occupational health and safety (OHS) national standards and codes of practice
	• principles of good laboratory practice (GLP)
	• standard Australian test methods
	• registration/licensing requirements
	• ethical and legal responsibilities of enterprise personnel such as:
	  • animal welfare
	  • poisons
	  • environmental protection
	• National Association of Testing Authorities (NATA) accreditation
	• staff performance measures, such as:

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RANGE STATEMENT	
	• SOPs • three stage proficiency testing (external, interpersonal and replicate) • customer needs, specific testing requirements and standards • waste auditing and minimisation processes • strategic plans, productivity/profit targets and business plans • quality and continuous improvement processes and standards • cost-benefit analysis principles • workplace industrial agreements • hygiene/dress/behaviour regulations • grievance and dispute resolution procedures • access/equity/ethics principles, processes and procedures • batch cards, work schedules and rosters • maintenance and housekeeping schedules
Equipment and systems	Equipment and systems may include: • computer equipment • information management systems • financial accounting systems
Problem solving	Problem solving may include: • troubleshooting and fault finding • risk analysis, root cause analysis and aspect/impact analysis • non-routine operational/technical problems • non-routine administrative and personnel related problems
Communication	Communication may be with: • supervisors and managers • laboratory and production personnel • work teams • members of the public • customers • suppliers
Supervisory responsibilities	Supervisory responsibilities may include: • work practices within functional area:

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RANGE STATEMENT	
	• determining quality assurance sequences to minimise errors and inconsistencies • participating in external quality control programs • ensuring documentation of results and that data is processed and records maintained • personnel within functional area: • developing rosters to fulfil both work requirements and skill development opportunities • identifying roles and responsibilities for individuals and team members • providing effective communication pathways to ensure smooth and efficient operations • encouraging teams to solve problems relating to work flow and to suggest possible improvements to work organisation to maximise efficiency • operational plans: • determining work schedules that use resources efficiently and meet customer and enterprise needs • identifying possible variances of operational plans in order to prepare contingency plans • operational performance: • recognising problems and initiating corrective actions • continuously improving the skills of personnel in the workplace
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied

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RANGE STATEMENT	
	• where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Communication/organisation

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MSL924001A Process and interpret data

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to retrieve data, evaluate formulae and perform scientific calculations, present and interpret information in tables and graphs and keep accurate records. The unit requires personnel to solve problems of limited complexity where the information may be less obvious, but not contradictory, and can be determined by direct reasoning.

Application of the Unit

Application of the unit	This unit of competency is applicable to laboratory assistants, field/laboratory technicians and instrument operators in all industry sectors. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Retrieve and check data	1.1. Store and retrieve data using appropriate files and/or application software 1.2. Verify the quality of data using enterprise procedures 1.3. Rectify errors in data using enterprise procedures
2. Calculate scientific quantities	2.1. Calculate statistical values for given data 2.2. Calculate scientific quantities using given formulae and data and estimate uncertainties 2.3. Ensure calculated quantities are consistent with estimations and expectations 2.4. Report all calculated quantities using the appropriate units and correct number of significant figures
3. Present data in tables, charts and graphs	3.1. Present data in clearly labelled tables and charts 3.2. Graph data using appropriate scales to span the range of data or display trends 3.3. Report all data using the appropriate units and number of significant figures
4. Interpret data in tables, charts and graphs	4.1. Interpret significant features of graphs, such as gradients, intercepts, maximum and minimum values, and limit lines 4.2. Recognise and report trends in data
5. Keep accurate records and maintain confidentiality	5.1. Transcribe information accurately 5.2. Verify the accuracy of records following enterprise procedures 5.3. File and store workplace records in accordance with enterprise procedures 5.4. File all reference documents logically and keep them up-to-date and secured 5.5. Observe enterprise confidentiality standards

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- performing calculations of scientific quantities
- using scientific notation
- applying the concepts of metrology
- applying calculations to the workplace
- coding, recording and checking of data accurately
- presenting accurate results in the required format
- preparing graphs, tables and charts (pie, bar, histogram) and interpreting trends
- preparing and interpreting process control charts
- maintaining the confidentiality of data in accordance with workplace and regulatory requirements

Required knowledge

Required knowledge includes:

- concepts of metrology
- the international system of units (SI)
- relevant scientific and technical terminology
- uncertainty associated with measurement steps
- procedures for coding, entering, storing, retrieving and communicating data
- procedures for verifying data and rectifying mistakes
- converting units involving multiples and submultiples
- significant figures, rounding off, estimating, approximating
- transposing and evaluating formulae
- calculations involving fractions, decimals, proportions and percent
- determining statistical values of data such as mean, median, mode and standard deviation
- procedures for maintaining and filing records, and maintaining security of data

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • code, record and check the documentation of data • calculatescientific and statistical quantities relevant to the workplace and present accurate results in the required format • recognise anomalies and trends in data • maintain the confidentiality of data in accordance with workplace and regulatory requirements • keep records up-to-date and secure.

Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment.
	This unit of competency may be assessed with:
	• *MSL924002A Use laboratory application software*
	• technical units, such as:
	  • *relevant MSL973000 series units of competency*
	  • *relevant MSL974000 series units of competency*.
	Resources may include:
	• data sets and records
	• computer and relevant software or laboratory information system
	• relevant workplace procedures.

Method of assessment	The following assessment methods are suggested: • review of data worksheets, calculations, computer files (such as spreadsheets, databases, statistical analysis), graphs, tables and/or charts prepared by the candidate • review of records transcribed, maintained or stored by the candidate • feedback from supervisors and peers • questions to assess understanding of relevant procedures and trends in data • observation of the candidate as they process data, file

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EVIDENCE GUIDE	
	and store records. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. **Manufacturing** A laboratory assistant in a materials testing laboratory was performing routine tensile tests on samples of vinyl sheet. The assistant converted the readings from the machine to appropriate units using a simple calculation and recorded them in the logbook for that test method. After comparing these test results with previous results for the same type of vinyl material, the assistant found that the tensile strength was within the required range. However, it was at the lower rather than the upper end of the range as in previous testing. The assistant discussed the results with the laboratory supervisor. The calibration file for that machine showed that it had been calibrated four months previously and had not needed adjustment. Test results for the same period showed that the machine was giving lower than normal tensile strength readings for the few higher strength materials tested over the last two months. The assistant did some more checks and confirmed this trend. The machine was re-calibrated by the instrument company and the frequency of internal calibration checks by the laboratory assistant was increased. This problem would not have been detected or corrected as quickly without the assistant's initiative and competent recording and retrieval of test results and

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EVIDENCE GUIDE	
	calibration information. **Biomedical** A technical assistant works in a team with laboratory scientists and technical officers. Analyses of electrolytes are routine and occur in large volume throughput even in this small diagnostic laboratory. The assistant is assigned tasks that contribute to the overall production of results, their reporting and the quality control evaluation of the results. One task is the daily collection of the electrolyte analyses from the internal quality control area. In this case, the technical assistant plots the results on a Levy-Jennings graph and computes the mean value. The assistant reports immediately to the supervisor if the plots show deviations which indicate out-of-control results. **Food processing** Cooking and holding temperatures greatly affect the nutrient composition of processed foods. The CSIRO provides documentation of nutrient losses with temperature variations. For cooked foods, there is the added problem of microbial growth in the so called 'danger zone'. In one laboratory, the technical assistant conducts simple testing of foods using a temperature probe and also measures the temperature of the storage areas, holding trays or bainmaries and individual tray units. Careful documentation of the temperatures of the foods and times of measurement must be kept. The technical assistant supplies the data as tables and a plot of temperature versus time. For quality control purposes, the assistant is directed to use a cross reference of mercury thermometer readings versus probe measurements for ambient temperature. The assistant plots the thermometer readings against the probe readings and reports to the supervisor if the plot shows a slope other than the defined value.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards such as:
	  • AS ISO 1000-1998 The international system of units (SI) and its application
	  • ISO 5725 Accuracy (trueness and precision) of measurement methods and results
	  • ISO/IEC Guide 98-3:2008 Uncertainty of measurement - Part 3 Guide to the expression of uncertainty in measurement (GUM)
	• Eurachem/CITAC Guide CG4 Quantifying uncertainty in analytical measurement
	• national measurement regulations and guidelines
	• National Association of Testing Authorities (NATA) Technical notes
	• material safety data sheets (MSDS)
	• equipment manuals and warranty, supplier catalogues and handbooks
	• sampling and test procedures and standard operating procedures (SOPs)
	• enterprise quality manual and customer quality plan
	• validation of the equipment and associated software where applicable
	• validation of spreadsheets developed in-house for assay and process calculations

Concepts of metrology	Concepts of metrology may include:

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RANGE STATEMENT	
	• that all measurements are estimates • measurements belong to a population of measurements of the measured parameters • repeatability • precision • accuracy • significant figures • sources of error • uncertainty • traceability
Data	Data may be recorded on: • worksheets • spreadsheets • databases linked to information management systems Data may include results of: • observations • tests and measurements • analyses • surveys • quality assurance and control assessments Data may be presented in the form of: • graphs • tables • histograms • pie charts • bar charts • control charts • semi-quantitative observations and be expressed on a scale (for example, 1 to 4 or + to ++++)
Calculations	Calculations may be performed: • with or without a calculator • using computer software, spreadsheets, databases and statistical packages
Calculations of scientific quantities	Calculated of scientific quantities may include: • converting units involving multiples and submultiples

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RANGE STATEMENT	
	• significant figures, round off, estimate and approximate • transposing and evaluating formulae • fractions, decimals, proportions and percentages • perimeters and angles • percentage and absolute uncertainties in measurements and test results • statistical values of data, such as mean, median, mode and standard deviation • areas (m^2) and volumes (mL, L, m^3) of regular shapes, such as packaging • dose (mg), average mass, mass percentage, density, specific gravity, moisture, relative and absolute humidity, viscosity and permeability • ratios, such as mass to mass, mass to volume and volume to volume percentages • concentration, such as molarity, g/100mL, mg/L, mg/(L, ppm, ppb, dilution mL/L • average count, colonies per swab surface and cell counts, such as live and dead/total • process variables, such as pressure, gauge pressure, velocity and flow rates • biological oxygen demand (BOD), chemical oxygen demand (COD) and total organic carbons (TOC) • % content of moisture, ash, fat, protein, alcohol, sulphur dioxide and trace metals, such as calcium or zinc • food properties, such as % concentration (dry), friability, bitterness, brix, free amino nitrogen, diastatic power, calorific content and yeast viability • stress, strain, moduli and force
Records	Records could include information associated with: • purchase of equipment and materials, service records • safety procedures • history of calibration and test results
Occupational health and safety (OHS) and environmental	OHS and environmental management requirements:

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RANGE STATEMENT	
management requirements	• all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Data

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MSL925001A Analyse data and report results

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to perform scientific calculations, analyse trends and uncertainty in data and report results within the required timeframe.

Application of the Unit

Application of the unit	This unit of competency is applicable to technical officers and laboratory technicians working in all industry sectors. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These can be found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		
	MSL924001A	*Process and interpret data*

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Perform scientific calculations	1.1. Ensure raw data are consistent with expectations and reasonable ranges 1.2. Calculate scientific quantities involving algebraic, power, exponential and/or logarithmic functions 1.3. Ensure calculated quantities are consistent with estimations 1.4. Present results using the appropriate units, uncertainties and number of significant figures
2. Analyse trends and relationships in data	2.1. Determine linear and non-linear relationships between sets of data 2.2. Prepare and analyse control charts to determine if a process is in control 2.3. Identify possible causes for out-of-control condition 2.4. Follow enterprise procedures to return process to in-control operation
3. Determine variation and/or uncertainty in data distributions	3.1. Organise raw data into appropriate frequency distributions 3.2. Calculate means, medians, modes, ranges and standard deviations for ungrouped and grouped data 3.3. Interpret frequency distributions to determine the characteristics of the sample or population 3.4. Calculate standard deviations and confidence limits for means and replicates 3.5. Estimate the uncertainty in measurements using statistical analysis 3.6. Determine data acceptability using statistical tests and enterprise procedures
4. Check for aberrant results	4.1. Identify results that cannot be reconciled with sample, sample documentation, testing procedures and/or expected outcomes 4.2. Determine appropriate actions in consultation with supervisor as required
5. Report results	5.1. Use charts, tables and graphs to present results in the required format 5.2. Verify that entry of data and results are correct 5.3. Prepare reports in a format and style consistent with their intended use and enterprise guidelines 5.4. Communicate results within the specified time and in accordance with enterprise confidentiality and

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ELEMENT	PERFORMANCE CRITERIA
	security guidelines

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- performing laboratory computations
- calculating scientific quantities
- statistical analysis
- graphical analysis
- reporting results in the required formats and expected timeframe
- storing, retrieving and manipulating data following document traceability procedures
- maintaining the security and confidentiality of data in accordance with workplace and regulatory requirements

Required knowledge

Required knowledge includes:

- relevant scientific and technical terminology such as: variables, dispersion, central tendency, process control, process stability, normal distribution, confidence level and replication
- calculations involving evaluation of formulae containing algebraic, power, exponential and/or logarithmic functions
- preparation and interpretation on linear and non-linear graphs, complex control charts and frequency distribution plots
- determination of regression line equations, correlation coefficients
- statistical analysis and significance tests, such as t-test, f-test, analysis of variance (ANOVA)
- data acceptability tests, such as Q, T and Youden
- the characteristics of a valid measurement
- relevance/importance of the national measurement legislation and guidelines to laboratory measurement
- sources and estimates of uncertainty in measurements
- procedures for data traceability
- procedures for verifying data and rectifying mistakes
- procedures for maintaining and filing records, and maintaining security of data

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • store, retrieve and manipulate data following document traceability procedures • calculate scientific quantities relevant to their work and present accurate results in the required format • analyse data to determine relationships between variables • prepare frequency distributions for given data, calculate and interpret measures of central tendency and dispersion • prepare and interpret control charts and take appropriate actions • maintain the security and confidentiality of data in accordance with workplace and regulatory requirements • report results in the required formats and expected timeframe.

Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment.
	This unit of competency may be assessed with:
	• *MSL924002A Use laboratory application software*
	• technical units, such as:
	  • *relevant MSL974000 series units of competency*
	  • *relevant MSL975000 series units of competency*.
	Resources may include:
	• data sets and records
	• computer and relevant software or laboratory information system
	• relevant workplace procedures.

Method of assessment	The following assessment methods are suggested: • review of data worksheets, calculations, computer files (such as spreadsheets, databases), statistical analysis, graphs and/or tables prepared by the

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EVIDENCE GUIDE	
	candidate • questions to assess understanding of relevant procedures, trends in data and sources of uncertainty • review of reports prepared by the candidate • feedback from supervisors and peers regarding the candidate's ability to analyse and report data in accordance with enterprise procedures. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. **Manufacturing** Before pharmaceutical products can be approved for use in Australia, they must be tested for shelflife in their Australian sales packs. The shelf life of a preparation is the time of storage which results in a preparation becoming unfit for use, either through chemical decomposition of the active substances or physical deterioration of the preparation. Stability profiles are determined by storing the preparation under a range of temperature conditions and evaluating it at predetermined time intervals. For example, a technical assistant may be required to evaluate the physical parameters of the new tablet to detect any changes in its appearance, hardness, friability, disintegration and dissolution profile. The assistant regularly assays the tablets using a stability indicating assay. The results are plotted and the information gained is used to predict the

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EVIDENCE GUIDE	
	period of time for which the tablets will meet the appropriate standards for physical characteristics, purity and potency when stored under defined conditions. **Biomedical** Supplementation of vitamins and minerals in the diet as a means to avert a clinical problem is a popular area of research, linking epidemiological and clinical investigation with food analyses. In the example of folate, such combined studies have led to the fortification of a number of foods and the requirement for folate supplementation for women of child bearing age. A typical project team would involve medical staff, a dietician and a scientific or technical officer to perform the assays. One possible line of study is to control the level of supplementation for the person and introduce the micronutrient in a dose form over and above that given in a controlled baseline diet. Blood samples would be collected and the serum micronutrient levels assayed. The technical officer would be responsible for keeping the statistical quality control data and analysing the assays. The technical officer would work with the research team to correlate the serum levels with the dose input. To contribute effectively, the technical officer must understand the significance of the relationships between collected test data and the controlled experimental variables. **Food processing** A state government analytical laboratory recently performed comparative assays of (-carotene using ultraviolet-visible (UV-VIS) spectrometric and high performance liquid chromatography (HPLC) techniques. In any procedure where the assay is to be replaced, side by side analyses must be performed on multiple samples and the correlations between the data compared statistically. The two procedures are then developed or modified for local laboratories and a routine procedure developed. At this point, technical officers would assay the samples by the two methods. They would ensure that all procedures were followed with close attention to quality control. Precision would be assessed through frequent assays of the same samples. Sensitivity of the assay would be assessed by performing the assay over a range of sample concentrations. The technical officers would carefully document the procedures and record all

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EVIDENCE GUIDE	
	data for later validation. They may also provide preliminary graphical representations of data for their supervisor.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards such as:
	  • AS ISO 1000-1998 The international system of units (SI) and its application
	  • Eurachem/CITAC Guide CG4 Quantifying uncertainty in analytical measurement
	  • ISO 5725 Accuracy (trueness and precision) of measurement methods and results
	  • ISO/IEC Guide 98-3:2008 Uncertainty of measurement - Part 3 Guide to the expression of uncertainty in measurement (GUM)
	• national measurement regulations and guidelines
	• National Association of Testing Authorities (NATA) Technical notes
	• material safety data sheets (MSDS)
	• equipment manuals and warranty, supplier catalogues and handbooks
	• sampling and test procedures and standard operating procedures (SOPs)
	• enterprise quality manual and customer quality plan
	• validation of the equipment and associated software, where applicable
	• validation of spreadsheets developed in-house for assay and process calculations

Data records	Data records may include: • worksheets • spreadsheets or databases linked to information

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RANGE STATEMENT	
	management systems • the results of tests, measurements, analyses and surveys
Scientific and technical terminology	Scientific and technical terminology may include: • variables • dispersion • central tendency • process control • process stability • normal distribution • confidence level • replication
Laboratory computations	Laboratory computations may include: • algebraic, logarithmic, exponential and power functions • calculations involving fractions, decimals, ratios, proportions and percentages • evaluation of formulae containing powers, exponents and logarithms functions • use of scientific notation, correct units and correct number of significant figures • calculation of uncertainties • preparation and interpretation of linear, semi-log and log-log graphs • calculation and interpretation of statistical quantities, such as mean, median, mode, range, variance and standard deviation • determination of regression line equations and correlation coefficients • preparation and interpretation of more complex control charts and frequency distribution plots
Calculations of scientific quantities	Calculations of scientific quantities may include: • percentage and absolute uncertainties in measurements and test results • dose (mg), dilution(1:10), concentration (molarity, g/mL, mg/L, ppm, ppb) • pH, [H+], [OH-], buffer calculations, Ka, pKa, Kb, pKb, Kw • solubility constants Ks, pKs • radioactivity:

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RANGE STATEMENT	

	• half life, dose, activity and exposure
	• optical properties:
	  • absorbance/transmittance, path length, extinction coefficient, concentration (Beers law) and detection limits
	• electrical properties:
	  • conductivity, resistivity and dielectric constants
	• mechanical properties:
	  • stress, strain, elastic moduli, yield strength and hardness
	• thermal properties:
	  • heat capacity, thermal expansion, thermal conductivity and thermal resistance
	• food content (%) of water, ash, dietary and crude fibre, carbohydrate, protein, fat and specific vitamin
	• quantities associated with quality control monitoring, assessment and reporting

Graphical analysis	Graphical analysis may include: • determination of linear, logarithmic, exponential and power relationships • regression lines and interpretation of correlation coefficients • preparing frequency distributions for given data • calculating and interpreting measures of central tendency and dispersion

Calculations	Calculations may be performed:
	• with a calculator
	• without a calculator
	• with computer software such as:
	  • spreadsheets
	  • databases
	  • statistical packages

Statistical analysis	Statistical analysis may include the use of: • histograms, frequency plots, stem and leaf plots, boxplots and scatter plots • probability and normal probability plots • Pareto diagrams, Stewhart control charts and

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RANGE STATEMENT	
	CuSum control charts • regression methods for calibration, linearity checks and comparing analytical methods • analysis of variance (ANOVA) • data acceptability tests, such as Q, T and Youden
Records	Records may include information associated with: • purchase of equipment and materials • service records • safety procedures • history of calibration and test results
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Data

Competency field

Competency field	

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Co-requisite units

Co-requisite units		

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MSL943001A Work safely with instruments that emit ionising radiation

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to safely store, transport and operate instruments that emit ionising radiation following established safe work practices and in accordance with laboratory procedures and licensing requirements. Examples include, use of process control instrumentation, such as fluid level gauges using radioactive sources, on-site non-destructive testing of weldments using X-ray and gamma ray sources and density testing of asphaltic concrete.

Application of the Unit

Application of the unit	This unit of competency is applicable to laboratory or field assistants working in construction materials testing or similar industry sectors. They work under supervision or direction of paraprofessionals. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Store instruments safely and securely	1.1. Identify state or territory requirements for storage facilities and associated document processes 1.2. Store instruments in accordance with state or territory requirements and documented procedures 1.3. Secure instruments to prevent unauthorised access 1.4. Record instruments' movements and usage in accordance with documented procedures
2. Transport instruments safely and securely	2.1. Select vehicle suitable for the purpose 2.2. Attach regulation signage in accordance with state or territory requirements to indicate that radioactive sources are being carried 2.3. Ensure that instruments are properly located and fixed securely in place 2.4. Ensure security of instruments when the vehicle is unattended
3. Use instruments safely and maintain security	3.1. Follow safe working practices to minimise own exposure to radiation 3.2. Use radiation dosimeter to monitor own exposure to radiation 3.3. Follow safe work practices to minimise exposure of others to radiation 3.4. Follow safe work practices to protect the instrument from damage 3.5. Maintain instrument security
4. Monitor radiation levels	4.1. Check operation and calibration status of radiation survey meter 4.2. Perform radiation survey following documented procedure 4.3. Report atypical conditions and/or problems to appropriate personnel
5. Maintain records	5.1. Record observations, data and results in accordance with enterprise procedures 5.2. Maintain confidentiality of enterprise information
6. Perform emergency procedures	6.1. Identify potential emergency situations 6.2. Respond to emergencies in accordance with documented procedures 6.3. Report emergency situations to appropriate personnel

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- demonstrating emergency procedures
- performing and documenting radiation surveys using radiation monitors
- using a radiation dosimeter
- placing the instrument into storage safely and securely
- transporting the instrument in a motor vehicle safely
- safely handling and maintaining the instrument and keeping other personnel clear of radiation sources
- observing, interpreting and reporting atypical situations
- promptly communicating problems to appropriate personnel

Required knowledge

Required knowledge includes:

- health, safety and emergency procedures relevant to radioactive devices
- factors affecting radiation intensity
- principles of external radiation protection and practical methods of minimising radiation exposure
- methods of measuring and detecting ionising radiation
- nature of radiation, different types of radiation, their characteristics, sources and shielding methods
- physiological effects of ionising radiation
- state or territory licensing requirements
- national codes of practice
- general guidelines for safe handling of radiation sources

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • perform operations in accordance with standards, codes, procedures and enterprise requirements • safely handle, store and transport instruments keeping other people clear of radiation sources • perform and document radiation surveys • recognise, interpret and report problems to appropriate personnel promptly.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL924001A Process and interpret data* • *MSL943002A Participate in laboratory/field workplace safety* • *MAL974010A Perform mechanical tests*. Resources may include: • appropriate tools, instruments, equipment and materials • enterprise procedures, test methods, equipment and manuals.
Method of assessment	The following assessment methods are suggested: • analysis of work completed by the candidate over a period of time to ensure accuracy, consistency and timeliness • observation of candidate using the instruments in a range of work contexts • review of enterprise documentation completed by the candidate • feedback from peers and supervisors • use of suitable simulation and/or a range of case studies/scenarios. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those

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EVIDENCE GUIDE	
	aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case study below to illustrate the practical application of this unit of competency and show its relevance in a workplace setting. **Construction materials testing** Soil moisture density gauges are used extensively for measuring the density of soils, cement treated roadbase, roller compacted concrete and asphalt. They provide a non-destructive means of monitoring compaction operations during construction, so that additional rolling can be provided before the material sets or is covered with another layer. National and state/territory codes of practice regulate the use of equipment that emits ionising radiation. States and territories also have licensing and registration requirements for people involved in owning, storing, transporting or using such equipment. Soil moisture density gauges are used on construction sites, so they are transported to the test site in motor vehicles. They must be protected from damage and stored safely and securely while not in use. The operator must ensure that bystanders are kept clear to minimise radiation exposure. Owners of gauges are required to have documented procedures and ensure that operators are adequately trained. To ensure the safety and integrity of the gauge, radiation surveys are required at regular intervals. A hand-held radiation meter is used, and the results recorded.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards, such as:
	  • AS 2243.4-1998 Safety in laboratories - Ionising radiations
	  • AS/NZS 2243.5:2004 Safety in laboratories - Non-ionising radiations - Electromagnetic, sound and ultrasound
	• Australian Dangerous Goods Code
	• Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) Codes of Practice
	• calibration and maintenance schedules
	• enterprise recording and reporting procedures
	• equipment manuals
	• equipment startup, operation and shutdown procedures
	• licensing requirements
	• material, production and product specifications
	• National Association of Testing Authorities (NATA) Accreditation programs requirements
	• national environment protection measures
	• National Health and Medical Research Council (NHMRC) Guidelines
	• occupational health and safety (OHS) national standards and codes of practice
	• production and laboratory schedules
	• quality manuals
	• standard operating procedures (SOPs)

Instruments and equipment	Instruments and equipment used may include:

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RANGE STATEMENT	
used	• soil moisture/density gauges • borehole logging probes • fluid density/level detectors • battery chargers • radiation monitors/dosimeters • motor vehicles • storage areas for nuclear sources • documentation, including user manuals and enterprise safety manuals • radiation warning signs
Hazards and problems	Hazards and problems may include: • jamming of the source rod in the exposed position • incidents during transportation • fire • theft of equipment containing radioactive sources • on-site accidents • keeping other personnel clear of instrument • instrument breakdown
Critical elements for radiation safety	Critical elements for radiation safety include: • time (reduce the exposure time) • distance (maintain greatest distance possible at all times) • shielding (interpose as much radiation shielding between yourself and the radiation source as possible)
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection

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RANGE STATEMENT	
	control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Occupational health and safety

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MSL973001A Perform basic tests

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to perform tests and measurements using standard methods with access to readily available advice from supervisors.

Application of the Unit

Application of the unit	This unit of competency is applicable to laboratory/field assistants working in all industry sectors. In general, they do not calibrate equipment and make only limited adjustments to the controls. They do not interpret or analyse results or troubleshoot equipment problems. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Interpret test requirements	1.1. Review test request to identify samples to be tested, test method and equipment involved 1.2. Identify hazards and enterprise controls associated with the sample, preparation methods, reagents and/or equipment
2. Prepare sample	2.1. Record sample description, compare with specification, record and report discrepancies 2.2. Prepare sample in accordance with appropriate standard methods
3. Check equipment before use	3.1. Set up test equipment in accordance with test method 3.2. Perform pre-use and safety checks in accordance with enterprise procedures and manufacturer's instructions 3.3. Identify faulty or unsafe equipment and report to appropriate personnel 3.4. Check calibration status of equipment and report any out of calibration items to appropriate personnel
4. Perform tests on samples	4.1. Identify, prepare and weigh or measure sample and standards to be tested 4.2. Conduct tests in accordance with enterprise procedures 4.3. Record data in accordance with enterprise procedures 4.4. Perform calculations on data as required 4.5. Identify and report out of specification or atypical results promptly to appropriate personnel 4.6. Shut down equipment in accordance with operating procedures
5. Maintain a safe work environment	5.1. Use established safe work practices and personal protective equipment to ensure personal safety and that of other laboratory personnel 5.2. Minimise the generation of wastes and environmental impacts 5.3. Ensure safe disposal of laboratory and hazardous wastes 5.4. Clean, care for and store equipment and reagents as required

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- interpreting enterprise procedure or standard methods accurately
- using safety information, such as material safety data sheets (MSDS) and performing procedures safely
- checking test equipment before use
- completing all tests within required timeline without sacrificing safety, accuracy or quality
- calculating, recording and presenting results accurately and legibly
- maintaining security, integrity and traceability of all samples, data/results and documentation
- cleaning and maintaining equipment

Required knowledge

Required knowledge includes:

- concepts of metrology
- the international system of units (SI)
- purpose of test
- principles of the standard method
- pre-use equipment checks
- relevant standards/specifications and their interpretation
- sources of uncertainty in measurement and methods for control
- enterprise and/or legal traceability requirements
- interpretation and recording of test result, including simple calculations
- procedures for recognition/reporting of unexpected or unusual results
- relevant health, safety and environment requirements

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • accurately interpret enterprise procedures or standard methods • complete all tests within the required timeline without sacrificing safety, accuracy or quality • demonstrate close attention to the accuracy and precision of measurements and the data obtained • maintain the security, integrity and traceability of all samples, data/results and documentation.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL922001A Record and present data*. Resources may include: • standard laboratory equipped with appropriate equipment standards and materials • enterprise procedures and standard methods, and equipment manuals • MSDS.
Method of assessment	The following assessment methods are suggested: • review of the quality of test data/results achieved by the candidate over time • inspection of records and workplace documentation completed by the candidate • feedback from peers and supervisors • observation of the candidate performing a range of basic tests • oral or written questioning to check underpinning knowledge of test procedures. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess

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EVIDENCE GUIDE	
	directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. **Manufacturing** Standard testing methods may be viewed as legal requirements that must be followed to ensure that a product manufactured in a chemical plant meets the specification by which it is sold to the customer. Technical assistants perform tests in a quality control laboratory to ensure that material meets legal requirements and the material is safe and effective in use. Peroxides may be present in ether as a result of light-catalysed air oxidation. Peroxides are toxic and can give rise to mixtures which are explosive when distilled. Technical assistants test ether to ensure that the level of peroxide is within acceptable limits. The test is done by shaking ether with a solution of potassium iodide. After standing for 30 minutes in the dark the yellow colour of the aqueous phase, due to the liberation of iodine, must not be more intense than a prepared standard solution. These tests ensure the quality and safety of the ether. **Food processing** A snack food company produces a range of high quality, impulse purchase snack foods. Some of these products are moisture and/or oxygen sensitive and are therefore packaged in multi-layer flexible packaging to provide optimum shelflife. The packaging must also be able to withstand the rigours of the production and distribution process. While the packaging is purchased to meet the shelflife and distribution specifications, the quality

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EVIDENCE GUIDE	
	assurance program requires the periodic evaluation of the packaging materials against these specifications. A laboratory assistant uses standard methods to test the tearing resistance, bursting strength, impact resistance and permeability and/or leakage of the snack food packaging. Tests are also conducted on aspects of the manufacturing process that can affect shelflife. These tests involve the measuring of the heat-seam strength and the sealing performance of the closure process. The test results are recorded by the laboratory assistant to verify the conformance of the materials to the supplier specifications and of the process to the manufacturing specifications. The assistant reports any anomalies or non-conformances to the appropriate personnel. **Construction materials testing** A technician performs an Aggregate Stripping Test (AS 1141.50) and enters the results in the laboratory's information management system (LIMS). The resulting 20-30% stripped values (i.e. 70-80% adhering) indicate a 'fail' result. The technician notes that he has repeated the test and obtained the same 'fail' result. The laboratory manager reviews the results and asks the technician to explain how he performed the test. He describes how he prepared 3-4 mm thick plates of bitumen and binding agent in the mould and then placed 50 small clean pieces of aggregate on top. After treatment in an oven for 24 hours and a 50°C water bath in accordance with the test method, the technician had then carefully pulled out the pieces of aggregate and avoiding any twisting motion. He then estimated the % of bitumen adhering to each of the stones with the expectation that the stripped value would be about 5% (i.e. 95% adhering). The manager is satisfied that the technician has performed the test in accordance with the method and suggested that he now re-run the test with a known aggregate as a control. This test gives a stripped value of 5-7% (i.e. 93-95% adhering). The manager is now sufficiently confident of the laboratory's results to sign and issue the test report and explain the aggregate's 'test failure' to the client.

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Range Statement

RANGE STATEMENT	
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Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards, such as:
	  • AS ISO 1000-1998 The international system of units (SI) and its application
	  • AS ISO 17025-2005 General requirements for the competence of testing and calibration laboratories
	  • AS/NZS 2243 Set:2006 Safety in laboratories set
	• Australian code of good manufacturing practice for medicinal products (GMP)
	• calibration and maintenance schedules
	• enterprise recording and reporting procedures
	• equipment manuals
	• equipment startup, operation and shutdown procedures
	• MSDS and safety procedures
	• material, production and product specifications
	• national measurement regulations and guidelines
	• principles of good laboratory practice (GLP)
	• production and laboratory schedules
	• quality manuals
	• standard operating procedures (SOPs)

Concepts of metrology	Concepts of metrology may include: • that all measurements are estimates • measurements belong to a population of measurements of the measured parameters

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RANGE STATEMENT	
	• repeatability • precision • accuracy • significant figures • sources of error • uncertainty • traceability
Preparation of samples	Preparation of samples may include: • sub-sampling or splitting using procedures, such as riffling, coning and quartering, manual and mechanical splitters • diluting samples • physical treatments, such as ashing, dissolving, filtration, sieving, centrifugation and comminution • moulding, casting or cutting specimens

Typical tests carried out by laboratory/field assistants	Typical tests carried out by laboratory/field assistants may include:
	• visual/optical tests of appearance, colour, texture, identity, turbidity, refractive index (alcohol content and Baume/Brix)
	• physical tests:
	  • density, specific gravity and compacted density
	  • moisture content and water activity
	  • particle size, particle shape and size distribution
	• chemical tests:
	  • gravimetric
	  • colorimetric
	  • electrical conductivity (EC) and pH
	  • specific ions using dipsticks and kits
	  • nutrients (e.g. nitrates and orthophosphates) using basic kits
	  • ashes, including sulphated ashes
	• biological/environmental tests:
	  • pH, oxygen reduction potential (ORP), dissolved oxygen (DO) and (EC)
	  • E coli using test kits

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RANGE STATEMENT	

	• surface hygiene/presence of microbes
	• packaging tests:
	  • tearing resistance, bursting strength and impact resistance
	  • permeability and/or leakage
	• mechanical tests:
	  • Emerson class
	  • concrete slump

Measurements	Measurements may include: • simple ground surveys • meteorological parameters, such as wind direction/strength, rainfall, maximum/minimum temperature, humidity and solar radiation • simple background radiation survey • production/process parameters, such as temperature, flow and pressure • gas levels in a confined space
Common measuring equipment	Common measuring equipment may include: • dimension apparatus • DO and EC • analogue and digital meters and charts/recorders • basic chemical and biological test kits • dipsticks and site test kits (e.g. HACK) • timing devices • temperature measuring devices, such as thermometers and thermocouples
Hazards	Hazards may include: • electric shock • biohazards, such as microbiological organisms and agents associated with soil, air, water, blood and blood products, and human or animal tissue and fluids • solar radiation, dust and noise • chemicals, such as sulphuric acid, fluorides and hydrocarbons • aerosols • sharps, broken glassware and hand tools

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RANGE STATEMENT	
	• flammable liquids • dry ice and liquid nitrogen • fluids under pressure • sources of ignition • occupational overuse syndrome, slips, trips and falls • manual handling, working at heights and working in confined spaces • crushing, entanglement and cuts associated with moving machinery or falling objects
Enterprise controls to address hazards	Enterprise controls to address hazards may include: • use of MSDS • use of signage, barriers and service isolation tags • use of personal protective equipment, such as hard hats, hearing protection, sunscreen lotion, gloves, safety glasses, goggles, face guards, coveralls, gowns, body suits, respirators and safety boots • use of appropriate equipment, such as biohazard containers and cabinets and laminar flow cabinets • recognising and observing hazard warnings and safety signs • labelling of samples, reagents, aliquoted samples and hazardous materials • handling and storage of all hazardous materials and equipment in accordance with labelling, MSDS and manufacturer's instructions, and enterprise procedures and regulations • cleaning and decontaminating equipment and work areas regularly using recommended procedures • following established manual handling procedures for tasks involving manual handling
Minimising environmental impacts	Minimising environmental impacts may involve: • recycling of non-hazardous waste, such as chemicals, batteries, plastic, metals and glass • appropriate disposal of hazardous waste • correct disposal of excess sample/test material • correct storage and handling of hazardous

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RANGE STATEMENT	
	chemicals
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Testing

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MSL973002A Prepare working solutions

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to prepare working solutions and to check that existing stocks are suitable for use. Calculations of quantities, choice of reagent grades and required dilutions will be specified by the supervisor.

Application of the Unit

Application of the unit	This unit of competency is applicable to laboratory assistants working in all industry sectors. Test solutions include those required to perform laboratory tests. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Safely use laboratory chemicals, glassware and equipment	1.1. Apply appropriate safety precautions for use of laboratory equipment and hazardous chemical materials 1.2. Use appropriate laboratory glassware and measuring equipment 1.3. Clean and store glassware and equipment in accordance with enterprise procedures
2. Make up working solutions	2.1. Identify the relevant standard methods for solution preparation 2.2. Assemble specified laboratory equipment 2.3. Select and prepare materials and solvent of specified purity 2.4. Measure appropriate quantities of reagents for solution preparation and record data 2.5. Prepare labels and log solution details in laboratory register 2.6. Transfer solutions to appropriately labelled containers
3. Check existing stock of solutions	3.1. Monitor shelf life of working solutions according to laboratory procedures 3.2. Replace out-of-date or reject solutions according to laboratory procedures 3.3. Conduct routine titrimetric analyses, if appropriate, to determine if solutions are fit for purpose

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- using appropriate materials, equipment and procedures to prepare solutions
- following appropriate occupational health and safety (OHS), and hygiene procedures, if appropriate
- using all equipment safely and efficiently
- using enterprise procedures to calculate concentrations
- identifying solutions not fit for use
- using titrations to determine the concentration of solutions
- labelling, storing and disposing of solutions appropriately
- recording and presenting data appropriately

Required knowledge

Required knowledge includes:

- relevant biological, chemical, food and laboratory terminology
- principles of metrology
- the international system of units (SI)
- concentration terms, such as % w/w, % w/v, % v/v, ppm (mg/L) and molarity
- basic theory of acids, bases, salts, buffers and neutralisation
- enterprise procedures for preparing solutions
- calculations required to prepare specified amounts of solutions of specified concentration
- appropriate OHS procedure for preparing, handling and disposal of solutions
- use of material safety data sheets (MSDS)
- relevant health, safety and environment requirements

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • prepare working solutions in compliance with relevant standards, appropriate procedures and/or enterprise requirements • follow OHS procedures to safely use laboratory chemicals glassware and equipment • make up working solutions according enterprise procedures • check existing stocks of solutions as being fit for purpose.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL922001A Record and present data* • *MSL943002A Participate in laboratory/field workplace safety*. Resources may include: • standard laboratory equipped with appropriate equipment and reagents • SOPs and testing methods • access to appropriate containers and storage facilities.
Method of assessment	The following assessment methods are suggested: • inspection of solutions prepared, labelled and stored by the candidate • review of solution records and workplace documentation completed by the candidate • feedback from peers and supervisors • observation of the candidate preparing working solutions • oral or written questioning. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess

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EVIDENCE GUIDE	
	directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and show its relevance in a workplace setting. **Manufacturing** When starting materials used for the manufacture of common household materials are in transit from the supplier to the manufacturer, they may degrade if subjected to conditions, such as heat, moisture, light and oxygen. Even when the supplier ships quality materials to the manufacturing plant, the materials may be sub-standard when they arrive. Quality control tests are designed to test starting materials to ensure they are within specification. For example, aspirin forms salicylic acid when stored under adverse conditions. Laboratory assistants prepare and monitor the quality of solutions, such as ferric chloride solution, which gives an intense violet colour when added to salicylic acid but gives no colour with aspirin. Absence of the violet colouration indicates that breakdown of the aspirin hasn't occurred. **Biomedical** A laboratory assistant made up 1 litre of buffer solution using buffer tablets and a 1 litre volumetric flask as specified in the method. To ensure the solution was suitable for use the assistant measured the pH and found it was within acceptable range. The assistant then appropriately labelled a storage vessel and stored the buffer according to requirements. By following enterprise procedures the shelf life of the buffer was maximised.

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EVIDENCE GUIDE	
	Environmental An environmental laboratory is contracted to determine the acidity of water samples taken from local lakes and streams. A laboratory assistant is required to make up small batches of 0.01M sodium hydroxide and to determine its concentration by titrating it against a standard solution of potassium acid phthalate using phenolphthalein indicator. This procedure is carried out monthly to ensure that the concentration of the sodium hydroxide solution is accurately known. Alternatively, the laboratory assistant may be required to prepare and standardise a fresh batch of sodium hydroxide on a monthly basis. In this case, he/she must understand the underpinning knowledge of basic acid/base theory, potential problems of interferences (such as slow absorption of carbon dioxide by sodium hydroxide solution) so as to ensure that the concentrations of workup solutions are accurately known. He/she must also be skilled in calculating and performing dilution when required to prepare such low concentrations (0.01M) of working solutions.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards, such as:
	  • AS 2163-2000 Laboratory glassware - Measuring cylinders
	  • AS 2165-1996 Laboratory glassware - Burettes AS 2162.1-1996 Verification and use of volumetric apparatus - General - Volumetric glassware
	  • AS ISO 1000-1998 The international system of units (SI) and its application
	  • AS ISO 17025-2005 General requirements for the competence of testing and calibration laboratories
	  • AS/NZS 2243 Set:2006 Safety in laboratories set
	• Australian code of good manufacturing practice for medicinal products (GMP)
	• calibration and maintenance schedules
	• enterprise recording and reporting procedures
	• equipment manuals
	• equipment startup, operation and shutdown procedures
	• MSDS and safety procedures
	• material, production and product specifications
	• national measurement regulations and guidelines
	• principles of good laboratory practice (GLP)
	• production and laboratory schedules
	• quality manuals

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RANGE STATEMENT	
	• standard operating procedures (SOPs)
Concepts of metrology	Concepts of metrology may include: • that all measurements are estimates • measurements belong to a population of measurements of the measured parameters • repeatability • precision • accuracy • significant figures • sources of error • uncertainty • traceability
Typical test solutions	Typical test solutions may include: • solutions required for diagnostic/analytical and limit tests in food and chemical laboratories, such as sulphates, chlorides and heavy metals • solutions, such as stains for standard diagnostic/analytical procedures in biomedical/environmental laboratories, such as cell staining, fixation of cells and tissues, suspension of cells and titrimetric indicators • solutions required for laboratory maintenance and disinfection, such as 70% ethanol and hypochlorite
Laboratory equipment	Laboratory equipment may include: • pH meters • balances • magnetic stirrers, water baths and hot plates • measuring cylinders, beakers, conical flasks, volumetric flasks, pipettes and burettes • filter papers and funnels • fume cupboards
Hazards	Hazards may include: • corrosive chemicals, such as acids and alkalis • sources of heat, such as burners • sharps and broken glassware • spillages
Safety precautions	Safety precautions may include:

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RANGE STATEMENT	
	• use of MSDS • use of personal protective equipment, such as safety glasses, gloves and coveralls • correct labelling of reagents and hazardous materials • handling and storing hazardous materials and equipment in accordance with labels, MSDS, manufacturer's instructions, and enterprise procedures and regulations • regular cleaning and/or decontamination of equipment and work areas
Monitoring quality of solutions	Monitoring quality of solutions may include: • noting turbidity to exclude absorption of moisture • noting deposits to exclude microbial contamination or chemical degradation • noting crystals to exclude evaporation • conducting titrations to check concentration • noting colour changes indicating a pH shift with solutions containing indicators • checking expiry dates on solution containers
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

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Unit sector	Testing

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MSL973006A Prepare trial batches for evaluation

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to prepare trial batches of materials for evaluation. Materials can include soil, minerals and manufactured products, such as concrete, asphalt, food, plastics, paint and other industrial chemicals.

Application of the Unit

Application of the unit	This unit of competency is applicable to laboratory assistants working in all industry sectors. It describes work conducted by laboratory assistants, generally working under the guidance of a senior technician or laboratory supervisor/manager. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for trial batch mixing	1.1. Identify the job, materials, appropriate procedures and safety requirements 1.2. Record description of the job to be undertaken, compare with specification and report any variations 1.3. Select and prepare tools, equipment and materials in accordance with job requirements 1.4. Confirm the properties and quantities of materials to be used 1.5. Confirm that the required materials are available and ready for use
2. Mix trial batch for evaluation	2.1. Measure out quantities of materials ready for mixing 2.2. Mix the materials according to established procedures 2.3. Discharge the mixture ready for inspection and testing according to established procedures 2.4. Record details of the mix and any observations according to established procedures
3. Evaluate properties of the mixture by inspection and standard test methods	3.1. Obtain representative samples of the mix for testing 3.2. Perform specified tests according to established procedures 3.3. Handle and transport samples in accordance with established procedures 3.4. Label samples and record details in accordance with established procedures
4. Clean equipment and dispose of materials	4.1. Clean mixing, measuring, sampling and testing equipment after use 4.2. Return unused materials to storage 4.3. Dispose of excess materials safely and ethically
5. Maintain records	5.1. Record data in accordance with established procedures 5.2. Maintain equipment records in accordance with established procedures 5.3. Maintain confidentiality of enterprise information
6. Maintain a safe work environment	6.1. Use established safe work practices and personal protective equipment to ensure personal safety and that of other laboratory personnel 6.2. Minimise the generation of wastes and environmental impacts

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ELEMENT	PERFORMANCE CRITERIA
	6.3. Ensure safe disposal of laboratory and hazardous wastes 6.4. Clean, care for and store equipment and reagents as required

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Required skills include: • performing simple calculations • making accuratemeasurements of volume and mass • representative sampling • working safely with equipment and hazardous materials • working safely in laboratory and field conditions • setting up and maintaining tools and equipment • using tools and equipment to perform basic sampling and testing techniques • observing and recording information on testing and sampling • handling, transporting and storing materials • observing interpreting and reporting atypical situations
Required knowledge
Required knowledge includes: • the international system of units (SI) • concepts of metrology • the properties of mixing materials and how they affect the properties of the final product • hazards involved with materials and equipment involved • representative sampling • uses of various materials/enterprise products • basic testing methods for relevant materials • enterprise traceability requirements • relevant health, safety and environment requirements

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • perform operations in accordance with laboratory and/or enterprise procedures, and appropriate legislative requirements • accurately measure, calculate and record batch quantities, concentrations and other relevant parameters • evaluate properties of the mixture by inspection and standard test methods • recognise and report problems and atypical situations to relevant personnel.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL952002A Handle and transport samples or equipment* • *MSL954001A Obtain representative samples in accordance with sampling plan* • *MSL973001A Perform basic tests*. Resources may include: • standard facility with appropriate tools, equipment and materials • enterprise procedures, MSDS and product formulation/specifications.
Method of assessment	The following assessment methods are suggested: • analysis of trial batches prepared by the candidate over a period of time to ensure accurate and consistent work is obtained within required timelines • inspection of workplace documentation completed by the candidate • feedback from peers and supervisors • use of suitable simulation and/or a range of case studies/scenarios.

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EVIDENCE GUIDE	
	In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case study below to illustrate the practical application of this unit of competency and show its relevance in a workplace setting. **Construction materials** A laboratory assistant works for a concrete manufacturer. A client requires concrete for a specific project that cannot be supplied using existing standard mixes. The manufacturer must use special aggregates and cement to meet the durability and strength specifications for the project. The laboratory manager obtains quantities of the materials for evaluation purposes. The assistant tests the aggregates to determine their grading properties. From these results, he/she designs a mix to satisfy the project specifications using a standard design method. The mix requires the use of pozzolanic materials and admixtures that were obtained from the suppliers. The manager provides the assistant with the batch quantities required to produce one cubic metre of concrete. To test the mix design, the assistant will produce a 20litre batch in the laboratory. He/she calculates that this quantity will provide sufficient material for the required tests, without undue waste. He/she calculates the quantity of each material required for the trial batch. The assistant selects and prepares the tools and equipment she needs to mix, sample and test the concrete. He/she wears overalls, safety boots and glasses, and uses a barrier cream. He/she measures out

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EVIDENCE GUIDE	
	the quantities required for the trial batch, charges the mixer and allows it to mix for the specified time. He/she then discharges the concrete onto a suitable surface. He/she checks its slump, cohesiveness and air content, recording the data on standard enterprise forms. The manager inspects the concrete, and decides that it is over-sanded and has excessive slump. He/she adjusts the batch quantities and draws up amended values. He/she disposes of the excess concrete and cleans the equipment and tools. He/she then mixes a new batch using the amended figures. This process continues until the manager is satisfied with the concrete quality. He/she then mixes a larger batch so that he/she can prepare specimens for testing its hardened-state properties.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used
Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include: • Australian and international standards such as: • AS ISO 1000-1998 The international system of units (SI) and its application • enterprise recording and reporting procedures • enterprise sampling procedures for specific samples, sites and clients • equipment manuals • equipment startup, operation and shutdown procedures • maps and site plans • material safety data sheets (MSDS) • material, production and product/formulation specifications • national measurement regulations and guidelines • production and laboratory schedules • safety procedures • standard operating procedures (SOPs)
Materials, **tools and equipment**	Materials, tools and equipment may include: • soils, concrete, asphalt, aggregates, polymers, ceramics, metals, foodstuffs and solvents • ovens, sieves, balances, volumetric measures and mixers • hand tools, including shovels, scoops and spatulas • consumables, including sample bags and labels • documentation, including specifications,

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RANGE STATEMENT	
	manufacturers' handbooks and worksheets • test equipment appropriate to the various materials
Simple calculations	Simple calculations may include: • proportion, ratio and percentage for batch quantities • concentrations • other relevant parameters
Concepts of metrology	Concepts of metrology may include: • that all measurements are estimates • measurements belong to a population of measurements of the measured parameters • repeatability • precision • accuracy • significant figures • sources of error • uncertainty • traceability
Typical problems	Typical problems may include: • not following SOPs • measurement errors • calculation errors • materials of unreliable quality • insufficient mixing • poor sampling procedures • equipment breakdown and breakage
Hazards	Hazards may include: • electric shock • biohazards, such as microbiological organisms and agents associated with soil, air and water • solar radiation, dust and noise • chemicals • sharps, broken glassware and hand tools • flammable liquids and gases • fluids under pressure • manual handling heavy objects • crushing, entanglement and cuts associated

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RANGE STATEMENT	
	with moving machinery or falling objects
Safety procedures	Safety procedures may include: • recognising hazard warnings and safety signs • use of personal protective equipment, such as hard hats, hearing protection, sunscreen lotion, gloves, safety glasses, goggles, face guards, coveralls and safety boots • use of MSDS • following established manual handling procedures • regular cleaning and/or decontaminating of equipment and work areas • ensuring access to service shut-off points • identifying and reporting operating problems or equipment malfunctions
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Testing

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Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MSL974001A Prepare, standardise and use solutions

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to prepare, standardise and monitor the quality of solutions.

Application of the Unit

Application of the unit	This unit of competency is applicable to laboratory technicians working in all industry sectors. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare solutions	1.1. Select appropriate procedure for solution preparation 1.2. Select equipment, materials and solvent of specified purity 1.3. Measure appropriate quantities of reagents for solution preparation and record data. 1.4. Select and assemble specified laboratory equipment and appropriate grade of glassware 1.5. Perform specified dilutions 1.6. Prepare solutions to achieve homogeneous mix of the specified concentration 1.7. Label and store solutions to maintain identity and stability
2. Standardise and use volumetric solutions	2.1. Assemble appropriate laboratory equipment 2.2. Perform serial dilutions as required 2.3. Standardise the solution to the required specified range and precision 2.4. Label and store solutions to maintain identity and stability 2.5. Use standard volumetric solutions to determine concentration of unknown solutions
3. Calculate and record data	3.1. Calculate specified concentrations 3.2. Use authorised procedure if data is to be modified 3.3. Estimate and document uncertainty of measurement in accordance with enterprise procedures, if required 3.4. Record all relevant details according to laboratory procedures and report results 3.5. Report concentration with appropriate units
4. Monitor the quality of laboratory solutions	4.1. Check solutions for visual deterioration and expiry date 4.2. Restandardise or dispose of dated or deteriorated solutions 4.3. Record details and label solutions according to laboratory procedures
5. Maintain a safe work environment	5.1. Use established safe work practices and personal protective equipment to ensure personal safety and that of other laboratory personnel 5.2. Clean up spills using appropriate techniques to protect personnel, work area and environment 5.3. Minimise generation of waste and environmental

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ELEMENT	PERFORMANCE CRITERIA
	impacts 5.4. Ensure the safe collection of laboratory and hazardous waste for subsequent disposal 5.5. Store equipment and reagents as required

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- interpreting and following enterprise standard operating procedures (SOPs)
- determining equivalence points using indicators and graphical methods
- using calculation methods, including appropriate units, uncertainties, balancing equations, the concentration of the solution given the chemical reaction for the titration
- using apparatus and reagents to prepare standard solutions such as balances and volumetric glassware
- selecting and using primary and secondary standards and indicators
- performingquality assurance checks for solution performance
- performing titrations
- recognising control results that are not within acceptable range
- interpreting and using safety information, such as that provided by material safety data sheets (MSDS) and follow relevant safety procedures

Required knowledge

Required knowledge includes:

- solution terminology, chemistry of acids, bases, buffers, redox reactions and complexiometric reactions
- concepts of metrology
- grades of glassware, reagents and their use
- reactions used for standardisation and desirable characteristics
- enterprise communication and reporting procedures
- occupational health and safety (OHS) procedures, including those for using corrosive materials
- relevant health, safety and environment requirements

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • use balances and volumetric glassware • select and use primary and secondary standards • select and use indicators • perform quality assurance checks for solution performance • perform titrations using laboratory procedures with required accuracy and precision and within required timelines • calculate the concentration of the solution given the chemical reaction for the titration • recognise control results that are not within acceptable range • record results to enterprise standards • label and store solutions in accordance with enterprise procedures • interpret and follow enterprise SOPs • interpret and use safety information, such as that provided by MSDS and follow relevant safety procedures.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *relevant MSAL974000 series units of competency, and* • *relevant MSAL975000 series units of competency dealing with sampling, tests and measurements*. Resources may include: • standard laboratory equipped with appropriate volumetric equipment • laboratory reagents and equipment • SOPs and testing methods.
Method of assessment	The following assessment methods are suggested:

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EVIDENCE GUIDE	
	• inspection and/or testing of solutions prepared by the candidate • review of records and workplace documentation completed by candidate • review of work outputs by the candidate over time to ensure accuracy, consistency and timeliness • feedback from peers and supervisors • observation of the candidate preparing, standardising and using a range of solutions • oral or written questioning. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. **Manufacturing** A standard solution is used to determine the concentration of unknown solutions. The quality of these analyses is critically related to the accuracy with which the concentration of the standard solution is known. Therefore, laboratory technicians spend considerable effort to ensure that the materials and methods used for the preparation and standardisation will lead to a solution of accurately known concentration. For example, anhydrous sodium carbonate is often used to prepare solutions to determine the concentrations of acids. The sodium carbonate is heated at a suitable temperature to remove any trace of moisture and cooled in a dessicator. An appropriate quantity is dissolved in distilled water

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EVIDENCE GUIDE	
	and made up to volume in a volumetric flask. This solution of known concentration is then titrated with acids of unknown concentration and the concentration of the acids determined. **Environmental** A laboratory technician was required to determine the total acidity of a water sample as part of a quality control program. The total acidity was measured by titrating the water sample with sodium hydroxide of known concentration using an appropriate indicator. The concentration of the sodium hydroxide was determined via a volumetric titration against a primary standard of potassium hydrogen phthalate. The value of the total acidity was determined by multiplying the volume of sodium hydroxide used with a numerical 'factor' which had been determined by the laboratory supervisor in order to save time. The value of the 'factor' was displayed on the titration equipment. However, a new technical assistant did the full calculation and found that his/her result differed slightly from that obtained using the 'factor'. After discussion with the laboratory supervisor it was agreed that the error was in the 'factor' and the assumption that each new batch of sodium hydroxide prepared was exactly the same concentration as all previous batches. This was incorrect as the concentration of each batch differed slightly and its actual concentration was determined accurate, using the primary standard. The procedure was changed so that the full calculation was required for all tests.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards, such as:
	  • AS 2163-2000 Laboratory glassware - Measuring cylinders
	  • AS 2165-1996 Laboratory glassware - Burettes AS 2162.1-1996 Verification and use of volumetric apparatus - General - Volumetric glassware
	  • AS ISO 1000-1998 The international system of units (SI) and its application
	  • AS/NZS ISO 9000 Set:2008 Quality management systems set
	  • AS ISO 17025-2005 General requirements for the competence of testing and calibration laboratories
	  • AS/NZS 2243 Set:2006 Safety in laboratories set
	• Australian code of good manufacturing practice for medicinal products (GMP)
	• calibration and maintenance schedules
	• enterprise recording and reporting procedures
	• equipment manuals
	• equipment startup, operation and shutdown procedures
	• MSDS and safety procedures
	• material, production and product specifications
	• national measurement regulations and guidelines
	• principles of good laboratory practice (GLP)

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RANGE STATEMENT	
	• production and laboratory schedules • quality manuals • SOPs • waste minimisation and safe disposal procedures
Solutions	Solutions may include but are not limited to: • solutions of strong/weak acids and bases • oxidising/reducing agents • solutions used for complexometric or precipitation titrations • stains for cells and tissues, enzymes, buffers and antibodies • diluents for maintaining isotonicity • organic solutions and histological fixatives
Apparatus and reagents to prepare standard solutions	Apparatus and reagents to prepare standard solutions may include: • balances • pipettes, burettes, volumetric glassware and weighing bottles • dessicators and filtering media • ovens and muffle furnaces • solutions, indicators and primary and secondary standards • auto titrators, pH meters and other related meters and electrodes for determining equivalence points, top pan and analytical balances • magnetic stirrers and heaters, and water baths
Checking useability of solutions	Checking useability of solutions may include: • examining stained samples for correct staining reactions • performing pH checks • confirming enzyme activity • checking red cell suspensions for haemolysis • ferric chloride for phenolic solutions • isotonicity for saline
Hazards	Hazards may include: • chemicals, such as strong acids and bases, and stains

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RANGE STATEMENT	
	• sharps and broken glassware • burners, hot plates, ovens and furnaces
Safe work practices	Safe work practices may include: • use of MSDS • use of personal protective equipment, such as gloves, safety glasses, goggles, faceguards, coveralls and gowns • use of biohazard containers, laminar flow cabinets and fume hoods • correct labelling of reagents and hazardous materials • handling and storing hazardous materials and equipment in accordance with labels, MSDS, manufacturer's instructions, and enterprise procedures and regulations • regular cleaning and/or decontaminating of equipment and work areas
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Testing

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Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MSL974003A Perform chemical tests and procedures

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to interpret chemical test requirements, prepare samples, conduct pre-use and calibration checks on equipment and perform routine chemical tests/procedures. These tests will involve several measurement steps. The unit includes data processing and interpretation of results and tracking of obvious test malfunctions where the procedure is standardised. However, personnel are not required to analyse data, optimise tests/procedures for specific samples or troubleshoot equipment problems where the solution is not apparent.

Application of the Unit

Application of the unit	This unit of competency is applicable to laboratory or technical assistants and instrument operators in all industry sectors. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Interpret and schedule test requirements	1.1. Review test request to identify samples to be tested, test method and equipment/instruments involved 1.2. Identify hazards and enterprise control measures associated with the sample, preparation/test methods, reagents and/or equipment 1.3. Plan work sequences to optimise throughput of multiple samples, if appropriate
2. Receive and prepare samples	2.1. Log samples using standard operating procedures (SOPs) 2.2. Record sample description, compare with specification and note and report discrepancies 2.3. Prepare samples and standards in accordance with chemical testing requirements 2.4. Ensure traceability of samples from receipt to reporting of results
3. Check equipment before use	3.1. Set up equipment/instruments in accordance with test method requirements 3.2. Perform pre-use and safety checks in accordance with relevant enterprise and operating procedures 3.3. Identify faulty or unsafe components and equipment and report to appropriate personnel 3.4. Check equipment calibration using specified standards and procedures, if applicable 3.5. Quarantine out of calibration equipment/instruments 3.6. Ensure reagents required for the test are available and meet quality requirements
4. Test samples to determine chemical species or properties	4.1. Operate equipment/instruments in accordance with test method requirements 4.2. Perform tests/procedures on all samples and standards, if appropriate, in accordance with specified methods 4.3. Shut down equipment/instruments in accordance with operating procedures
5. Process and interpret data	5.1. Record test data noting atypical observations 5.2. Construct calibration graphs, if appropriate, and compute results for all samples from these graphs 5.3. Ensure calculated values are consistent with expectations 5.4. Record and report results in accordance with

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ELEMENT	PERFORMANCE CRITERIA
	enterprise procedures 5.5. Estimate and document uncertainty of measurement in accordance with enterprise procedures, if required 5.6. Interpret trends in data and/or results and report out of specification or atypical results promptly to appropriate personnel 5.7. Determine if obvious procedure or equipment problems have led to atypical data or results
6. Maintain a safe work environment	6.1. Use established safe work practices and personal protective equipment to ensure personal safety and that of other laboratory personnel 6.2. Minimise the generation of wastes and environmental impacts 6.3. Ensure the safe collection of laboratory and hazardous waste for subsequent disposal 6.4. Care for and store equipment and reagents as required
7. Maintain laboratory records	7.1. Enter approved data into laboratory information management system 7.2. Maintain confidentiality and security of enterprise information and laboratory data 7.3. Maintain equipment and calibration logs in accordance with enterprise procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- interpreting test methods and procedures
- sample preparation procedures
- performing calibration checks
- using instruments for qualitative and/or quantitative analysis
- maintaining and evaluating reagents
- troubleshooting basic equipment/method
- using calculation methods, including appropriate units, uncertainties, balancing equations, and the concentration of the solution given the chemical reaction for the titration
- preparing calibration graphs and calculating results using appropriate units and precision
- applying theoretical knowledge to interpret gross features of data and make relevant conclusions such as identifying atypical results as out of normal range or an artefact
- tracing and sourcing obvious causes of an artefact
- recording and communicating results in accordance with enterprise procedures
- maintaining security, integrity, traceability of samples, sub-samples, test data, results and documentation

Required knowledge

Required knowledge includes:

- chemical principles and concepts underpinning test/procedure
- purpose of the tests
- concepts of metrology
- principles and concepts related to equipment/instrument operation and testing
- function of key components of the equipment/instrument and/or reagents
- effects of modifying equipment/instrument variables
- use of calibration procedures
- enterprise and/or legal traceability requirements
- relevant health, safety and environment requirements

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • interpret test methods/procedures accurately • prepare and test samples using procedures appropriate to the nature of sample • perform calibration checks (if required) • safely operate test equipment/instruments to enterprise standards and/or manufacturer's specification • prepare calibration graphs and calculate results using appropriate units and precision • apply basic theoretical knowledge to interpret gross features of data and make relevant conclusions • identify atypical results as out of normal range or an artefact • traces and source obvious causes of an artefact • communicate problems to a supervisor or outside service technician • record and communicate results in accordance with enterprise procedures • maintain security, integrity, traceability of samples, sub-samples, test data and results and documentation.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL924001A Process and interpret data* • *MSL974001A Prepare, standardise and use solutions*. Resources may include: • standard laboratory equipped with appropriate test equipment/instruments, standards and reagents • enterprise procedures and standard methods.
Method of assessment	The following assessment methods are suggested: • review of test data/results obtained by the candidate

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EVIDENCE GUIDE	
	over a period of time to check accuracy, consistency and timeliness of results • review of test records and workplace documentation completed by the candidate • observation of candidate conducting a range of chemical tests and procedures and sample preparation • feedback from peers and supervisors • oral or written questioning of chemical principles and concepts, test methods and enterprise procedures. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. **Manufacturing** Ultraviolet spectroscopy is a suitable method for determining the concentration of sulphanilamide in pharmaceutical preparations. The ultraviolet absorption spectrum is pH dependent, with the wavelength maximum different in acid and alkaline solutions. Example: a technician was conducting an analysis and noted that the wavelength maxima had moved from approximately 250nm to below 230nm. After reviewing the procedure being used and checking for possible errors, the technician found that an incorrect solvent had been used for the analysis. The hydrochloric acid solvent was replaced with sodium hydroxide, as per the standard method, and the correct absorption spectrum was obtained.

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EVIDENCE GUIDE	
	Environmental A technician was asked to test water samples from a local lake over several days to determine the lake's nutrient levels following reports of algal blooms in the lake over the preceding weeks. He/she used a field colorimeter kit to determine both nitrates and orthophosphates using SOPs. Because the same colorimetric cells were used for the nitrate and orthophosphate tests, they were carefully washed and rinsed with distilled water between all tests (as specified in the SOP). After reviewing the results from the first three days, the technician noted that the first orthophosphate result, which was done immediately after all the nitrate tests, was much higher than subsequent orthophosphate tests which were all consistently low. The technician argued that the 'high' results for the first orthophosphate test may be due to cross-contamination from trace amounts of reagents used in previous nitrate tests despite having closely followed the cleaning/rinsing SOPs. After discussion with his/her supervisor, the technician modified the field procedures by using totally different colorimetric cells for the nitrate and orthophosphate tests. For all subsequent tests no 'high' orthophosphate results were obtained for the first sample. As a result, the laboratory supervisor amended the SOPs to incorporate this new requirement. **Food processing** Regular checks are conducted on the percentage of salt in cheese at a dairy company's laboratory. A technician checks the results from the airomatic salt-titration equipment and, if the results are abnormal, notifies the supervisor before taking appropriate action. After obtaining a high result, for example, the assistant notified the supervisor and then began checking the machine to identify a possible reason for the high reading. He/she found that the supply bottle of silver nitrate used in the test was almost empty. This had resulted in less solution being pumped through the equipment than required, leading to graph readings that indicated a high percentage of salt. After replacing the silver nitrate bottle and recalibrating the equipment, the assistant retested the cheese samples and found that they contained the expected 1-2% salt.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards, such as:
	  • AS 2134.1-1999 Recommended practice for chemical analysis by atomic absorption spectrometry - Flame atomic absorption spectrometry
	  • AS 2162.1-1996 Verification and use of volumetric apparatus - General - Volumetric glassware
	  • AS 3753-2001 Recommended practice for chemical analysis by ultraviolet/visible spectrophotometry
	  • AS ISO 1000-1998 The international system of units (SI) and its application
	  • AS ISO 17025-2005 General requirements for the competence of testing and calibration laboratories
	  • AS/NZS 2243 Set:2006 Safety in laboratories set
	  • AS/NZS ISO 9000 Set:2008 Quality management systems set
	• Australian code of good manufacturing practice for medicinal products (GMP)
	• calibration and maintenance schedules
	• enterprise recording and reporting procedures
	• equipment manuals
	• equipment startup, operation and shutdown procedures
	• industry methods, such as Royal Australian

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RANGE STATEMENT	
	Chemical Institute (RACI) and/or American Association of Cereal Chemists (AACC) methods for inorganic constituents • material safety data sheets (MSDS) and safety procedures • material, production and product specifications • national measurement regulations and guidelines • principles of good laboratory practice (GLP) • production and laboratory schedules • quality manuals and equipment and procedure manuals • SOPs • waste minimisation and safe disposal procedures
Sample preparation processes	Sample preparation processes may include: • grinding • mulling • preparation of discs • digestion • dissolving • ashing • refluxing • tracting • filtration • evaporation • flocculation • precipitation • washing • drying • centrifugation

Non-instrumental test/procedures	Non-instrumental test/procedures may include:
	• gravimetric analysis:
	  • loss on drying
	  • suspended solids
	  • ashes, such as sulphated and gravimetric assays (e.g. sulphates and nitrogen in fertilisers)
	  • Ni by dimethylglyoxime
	  • bitumen content of asphaltic concrete

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RANGE STATEMENT	

	• titrimetric analysis:
	  • acid/base determinations
	  • complexiometric, such as water hardness, Fe by dichromate and binder content analysis
	  • redox, such as precipitation of chlorides in water
	  • dissolved oxygen (DO), chemical oxygen demand (COD) and biochemical oxygen demand (BOD)
	• filtration, separation and solvent extraction techniques
	• corrosion testing, cement content and accelerated weathering

Instrumental tests	Instrumental tests may include: • spectrometry • chromatography • electrochemistry

Types of instrumentation and instrumental techniques	Types of instrumentation and instrumental techniques may include:
	• colorimetric techniques, such as enzyme activity, chlorine in water, specific cations and anions
	• infrared, ultraviolet-visible (UV-VIS) spectrophotometry
	• other spectrometric techniques:
	  • fluorimetric analysis, flame atomic emission and flame atomic absorption spectrometry
	  • fourier transform infrared
	• chromatographic techniques:
	  • column and thin layer analytical and preparative chromatography
	  • gas or liquid chromatography for purity, raw material and formulation checks
	  • ion chromatography for detection of nitrates, phosphates, sulphates, chlorides and bromides
	  • gel filtration chromatography for purification of proteins

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RANGE STATEMENT	

	• electrochemical techniques, such as pH, eH, conductivity and ion-selective electrodes
	• electrophoretic techniques for DNA patterns and determination of protein purity
	• soil testing:
	  • moisture content
	  • organic matter content
	  • specific anions and cations
	• auto-analysers for determination of total P, total Kjeldahl N, orthophosphate, nitrite/nitrate and ammonia

Chemical principles and concepts	Chemical principles and concepts may include: • ions, atoms, molecules, bonding and links to chemical properties • chemical reactions involving acid/base, redox, complex ion formation, solubility and equilibrium • energy levels and absorption/emission spectra
Chemical tests methods	Chemical tests methods may include: • control of starting materials, in-process materials and finished products • environmental monitoring • basic troubleshooting and/or problem solving within the scope of SOPs and enterprise processes

Hazards	Hazards may include:
	• chemicals:
	  • acids (e.g. sulphuric, perchloric and hydrofluoric)
	  • heavy metals and pesticides
	  • anions (e.g. fluoride)
	  • hydrocarbons (e.g. mono-aromatics)
	• aerosols from broken centrifuge tubes, pipetting
	• sharps and broken glassware
	• flammable liquids and gases
	• cryogenics, such as dry ice and liquid nitrogen
	• fluids under pressure, such as hydrogen in gas liquid chromatography, acetylene in atomic

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RANGE STATEMENT	
	absorption spectrometry • sources of ignition • high-temperature ashing processes • disturbance or interruption of services
Hazard control measures:	Hazard control measures may include: • ensuring access to service shut-off points • recognising and observing hazard warnings and safety signs • labelling of samples, reagents, aliquoted samples and hazardous materials • handling and storage of hazardous materials and equipment in accordance with labelling, MSDS and manufacturer's instructions • identifying and reporting operating problems or equipment malfunctions • cleaning and decontaminating equipment and work areas regularly using enterprise procedures • using personal protective clothing and equipment, such as gloves, safety glasses and coveralls • using containment facilities (PCII, PCIII and PCIV physical containment laboratories), containment equipment (biohazard containers, laminar flow cabinets, Class I, II and III biohazard cabinets) and containment procedures • reporting abnormal emissions, discharges and airborne contaminants, such as noise, light, solids, liquids, water/waste water, gases, smoke, vapour, fumes, odour and particulates to appropriate personnel
Records	Records may include: • test and calibration results • equipment use, maintenance and servicing history • faulty or unsafe equipment
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management

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RANGE STATEMENT	
	requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Testing

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MSL974005A Perform physical tests

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to interpret physical test requirements, prepare samples, conduct pre-use and calibration checks on equipment and perform routine physical tests. These tests will involve several measurement steps. The unit includes data processing and interpretation of results and tracking of obvious test malfunctions where the procedure is standardised. However, personnel are not required to analyse data, optimise tests/procedures for specific samples or troubleshoot equipment problems where the solution is not apparent.

Application of the Unit

Application of the unit	This unit of competency is applicable to laboratory or technical assistants and instrument operators working in the manufacturing, environment, food and construction materials testing industry sectors. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Interpret and schedule test requirements	1.1. Review test request to identify samples to be tested, test method and equipment/instruments involved 1.2. Identify hazards and enterprise control measures associated with the sample, preparation/test methods and/or equipment 1.3. Plan work sequences to optimise throughput of multiple samples, if appropriate
2. Receive and prepare samples	2.1. Log samples using standard operating procedures (SOPs) 2.2. Record sample description, compare with specification and note and report discrepancies 2.3. Prepare samples and standards in accordance with physical testing requirements 2.4. Ensure traceability of samples from receipt to reporting of results
3. Check equipment before use	3.1. Set up equipment/instruments in accordance with test method requirements 3.2. Perform pre-use and safety checks in accordance with relevant enterprise and operating procedures 3.3. Identify faulty or unsafe components and equipment and report to appropriate personnel 3.4. Check equipment calibration using specified procedures, if applicable 3.5. Quarantine out of calibration equipment/instruments
4. Test samples to determine physical properties	4.1. Operate equipment/instruments in accordance with test method requirements 4.2. Perform tests/procedures on all samples and standards, if appropriate, in accordance with specified methods 4.3. Shut down equipment/instruments in accordance with operating procedures
5. Process and interpret data	5.1. Record test data noting atypical observations 5.2. Ensure calculated values are consistent with expectations 5.3. Estimate and document uncertainty of measurement in accordance with enterprise procedures, if required 5.4. Record and report results in accordance with enterprise procedures 5.5. Interpret trends in data and/or results and report out

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ELEMENT	PERFORMANCE CRITERIA
	of specification or atypical results promptly to appropriate personnel 5.6. Determine if obvious procedure or equipment problems have led to atypical data or results
6. Maintain a safe work environment	6.1. Use established safe work practices and personal protective equipment to ensure personal safety and that of other laboratory personnel 6.2. Minimise the generation of wastes and environmental impacts 6.3. Ensure the safe collection of laboratory and hazardous waste for subsequent disposal 6.4. Care for and store equipment and materials as required
7. Maintain laboratory records	7.1. Enter approved data into laboratory information management system 7.2. Maintain confidentiality and security of enterprise information and laboratory data 7.3. Maintain equipment and calibration logs in accordance with enterprise procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- using instruments for qualitative and/or quantitative analysis
- interpreting test methods and procedures
- sample preparation procedures
- performing calibration checks
- metrology techniques underpinning test/procedure including estimating uncertainty
- using instruments for qualitative and/or quantitative analysis
- maintaining and evaluating reagents
- troubleshooting basic equipment/method
- preparing calibration graphs and calculating results using appropriate units and precision
- applying theoretical knowledge to interpret gross features of data and make relevant conclusions such as identifying atypical results as out of normal range or an artefact
- tracing and sourcing obvious causes of an artefact
- recording and communicating results in accordance with enterprise procedures
- maintaining security, integrity, traceability of samples, sub-samples, test data, results and documentation

Required knowledge

Required knowledge includes:

- physical principles and concepts underpinning the test/procedure
- purpose of tests
- function of key components of the equipment/instrument
- effects on test of modifying equipment/instrument variables
- sample preparation procedures
- concepts of metrology
- basic equipment/method troubleshooting procedures
- enterprise and/or legal traceability requirements
- relevant health, safety and environment requirements

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • interpret test methods/procedures accurately • prepare and test samples in accordance with specified methods • perform calibration checks (if required) • safely operate test equipment/instruments to enterprise standards and/or manufacturer's specifications • apply basic knowledge of physical properties of materials to interpret gross features of data and make relevant conclusions • identify atypical results, such as out of normal range or an artefact • trace and source obvious causes of an artefact • communicate problems to a supervisor or outside service technician • calculate, record and communicate results in accordance with enterprise procedures • maintain security, integrity and traceability of samples, sub-samples, test data/results and documentation.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL924001A Process and interpret data*. Resources may include: • standard laboratory equipped with appropriate test equipment/instruments, standards and materials • enterprise procedures and standard methods.
Method of assessment	The following assessment methods are suggested: • review of test data/results obtained by the candidate over a period of time to check accuracy, consistency and timeliness of results

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EVIDENCE GUIDE	
	• review of test records and workplace documentation completed by the candidate • observation of candidate conducting a range of physical tests and procedures and sample preparation • feedback from peers and supervisors • oral or written questioning of physical principles and concepts, test methods and enterprise procedures. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. **Manufacturing** A technical assistant was measuring the specific density of a shipment of glycerol using a standard laboratory procedure. The result did not agree with the manufacturer's certificate of analysis. The assistant notified the manufacturer who came to the plant and checked the delivered material. It had been raining while the glycerol was in transit and rain water had entered the drum, diluting the glycerol. The drum was returned to the manufacturer and a new drum was supplied to the manufacturing plant. The manufacturer investigated the seals on the glycerol drums and took action to ensure that new seals would protect the product in transit. **Food processing** A technician was testing the melt flow index of a new type of polymer that was to be used as a sealant for

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EVIDENCE GUIDE	
	packages of freeze dried coffee. The technician measured the melt flow rate and found it was much too high. The technician then checked the melt flow equipment as per the manufacturer's directions and found the machine was out of calibration. After recalibration using recommended standards, another sample was obtained and retested. This time, the polymer was within specification and was released for use in production.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards, such as:
	  • AS ISO 1000-1998 The international system of units (SI) and its application
	  • AS ISO 17025-2005 General requirements for the competence of testing and calibration laboratories
	  • AS/NZS 2243 Set:2006 Safety in laboratories set
	  • AS/NZS ISO 9000 Set:2008 Quality management systems set
	• Australian code of good manufacturing practice for medicinal products (GMP)
	• calibration and maintenance schedules
	• data quality procedures
	• enterprise recording and reporting procedures
	• equipment startup, operation and shutdown procedures
	• material safety data sheets (MSDS)
	• material, production and product specifications
	• national measurement regulations and guidelines
	• principles of good laboratory practice (GLP)
	• production and laboratory schedules
	• quality manuals, equipment and procedures manuals
	• SOPs

Physical principles and concepts	Physical principles and concepts underpinning the

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RANGE STATEMENT	
underpinning the test/procedure	test/procedure may include: • matter, interatomic and intermolecular forces and states of matter • mass, weight, forces, pressure, energy, friction and slip resistance • properties of gases, pressure/volume/temperature, density, diffusion and compressibility • cohesive/adhesive forces, hydrostatic pressure, fluid flow, viscosity and friction • thermal expansion, thermal conductivity and coefficients of expansion • changes of state, energy content, enthalpy change and endothermic and exothermic processes • electromagnetic spectrum, primary/secondary colours, reflection, refraction diffraction and interference of light • electrical concepts, including electric field, voltage, current, resistance and AC/DC • electromagnetic concepts, including magnetic field and flux, and electromagnetic induction • sound concepts, including wave properties, amplitude, frequency and loudness (dB) • elasticity, hardness, strength of materials, plasticity, permeability and dispersion • electrical safety concepts including voltage, current, resistance, conductors/insulators and AC/DC
Preparation of samples	Preparation of samples may include processes, such as: • drying, washing, grinding, sieving, melting and moisture conditioning • cutting, trimming or machining of test specimens, etching

Physical tests and procedures	Physical tests and procedures may include:
	• precise measurement of position, orientation and dimensions:
	  • three-dimensional setup of manufacturing tools using inclinometers, verniers and laser
	  • thickness using vernier, X-ray and gamma

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RANGE STATEMENT	
	ray • particle size using sieving and laser • dimensional stability involving expansion, contraction and weathering • movement using strain gauge and accelerometer • mass, density and specific gravity: • moisture/density relationship • compaction • loose and compacted density • thermal tests: • thermal conductivity • coefficients of expansion (e.g. linear and volume) • melt flow index • calorimetry, (e.g. specific heat and latent heat) • combustion properties (e.g. enthalpy and energy content) • drying times • thermal stability of products • optical tests: • flatness and surface finish • refractive index • optical rotation • transmission/absorption of filters • colour matching of products • acoustic tests: • absorption, reflection and transmission • intensity, attenuation and loudness (dB) • amplitude and frequency • electrical tests: • conductance, resistance and insulation • temperature dependence of dielectrics • magnetic tests: • permeability • retentivity, hysteresis loss and coercivity • intrinsic induction

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RANGE STATEMENT	
Test and sample preparation equipment/materials	Test and sample preparation equipment/materials may include: • crushers, mulchers, grinders, mills, riffles and sieves • moulds, bags and containers • ovens, microwaves and water baths • mass balances • microscopes • dimension apparatus (e.g. calipers and micrometer) • rammers, compression rigs and load cells • chemical reagents and volumetric glassware • temperature measuring devices, such as thermometers and thermocouples • pH and conductivity meters • analogue and digital meters, charts/recorders, data loggers and computers
Tests	Tests may include methods for: • control of starting materials, in-process materials and finished products • investigation of sources of construction materials • basic troubleshooting of enterprise processes
Hazards	Hazards may include: • microbiological organisms and agents, associated with soil, air and water • chemicals, such as acids and solvents • radiation, such as alpha, beta, gamma, X-ray and neutron • sharps, broken glassware and hand tools • flammable liquids and gases • cryogenics, such as dry ice and liquid nitrogen • fluids under pressure, such as steam and industrial gases • sources of ignition • burners and ovens • disturbance or interruption of services • crushing, entanglement and cuts associated with moving machinery (grinders)

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RANGE STATEMENT	
Hazard control measures	Hazard control measures may include: • ensuring access to service shut-off points • recognising and observing hazard warnings and safety signs • labelling of samples and hazardous materials • handling and storage of hazardous materials and equipment in accordance with labelling, MSDS and manufacturer's instructions • identifying and reporting operating problems or equipment malfunctions • cleaning equipment and work areas regularly using enterprise procedures • using personal protective clothing and equipment, such as gloves, safety glasses, coveralls and safety boots • following established manual handling procedures • reporting abnormal emissions, discharges and airborne contaminants, such as noise, light, solids, liquids, water/waste water, gases, smoke, vapour, fumes, odour and particulates to appropriate personnel
Records	Records may include: • test and calibration results • equipment use, maintenance and servicing history • faulty or unsafe equipment
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and

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RANGE STATEMENT	
	Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Testing

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MSL974010A Perform mechanical tests

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to interpret mechanical test requirements, prepare samples, conduct pre-use and calibration checks on equipment and perform routine mechanical tests. These tests will involve several measurement steps. The unit includes data processing and interpretation of results and tracking of obvious test malfunctions where the procedure is standardised. However, personnel are not required to analyse data, optimise tests/procedures for specific samples or troubleshoot equipment problems where the solution is not apparent.

Application of the Unit

Application of the unit	This unit of competency is applicable to laboratory or technical assistants and instrument operators working in the manufacturing, food and construction materials testing industry sectors. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Interpret and schedule test requirements	1.1. Review test request to identify samples to be tested, test method and equipment/instruments involved 1.2. Identify hazards and enterprise control measures associated with the sample, preparation/test methods and/or equipment 1.3. Plan work sequences to optimise throughput of multiple samples, if appropriate
2. Receive samples and prepare test pieces	2.1. Log samples using standard operating procedures (SOPs) 2.2. Record sample description, compare with specification and note and report discrepancies 2.3. Prepare test pieces, and standards if appropriate, in accordance with mechanical testing requirements 2.4. Ensure traceability of samples from receipt to reporting of results
3. Check equipment before use	3.1. Set up equipment/instruments in accordance with test method requirements 3.2. Perform pre-use and safety checks in accordance with relevant enterprise and operating procedures 3.3. Identify faulty or unsafe components and equipment and report to appropriate personnel 3.4. Check equipment calibration using specified procedures, if applicable 3.5. Quarantine out-of-calibration equipment/instruments
4. Test samples to determine mechanical properties	4.1. Operate equipment/instruments in accordance with test method requirements 4.2. Perform tests/procedures on all test pieces and standards, if appropriate in accordance with specified methods 4.3. Shut down equipment/instruments in accordance with operating procedures
5. Process and interpret data	5.1. Record test data noting atypical observations 5.2. Ensure calculated values are consistent with expectations 5.3. Record and report results in accordance with enterprise procedures 5.4. Estimate and document uncertainty of measurement in accordance with enterprise procedures, if required 5.5. Interpret trends in data and/or results and report out

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ELEMENT	PERFORMANCE CRITERIA
	of specification or atypical results promptly to appropriate personnel 5.6. Determine if obvious procedure or equipment problems have led to atypical data or results
6. Maintain a safe work environment	6.1. Use established work practices and personal protective equipment to ensure personal safety and that of other laboratory personnel 6.2. Minimise the generation of wastes and environmental impacts 6.3. Ensure the safe collection of laboratory and hazardous waste for subsequent disposal 6.4. Care for and store equipment, used test pieces and back-up samples as required
7. Maintain laboratory records	7.1. Enter approved data into laboratory information management system (LIMS) 7.2. Maintain confidentiality and security of enterprise information and laboratory data 7.3. Maintain equipment and calibration logs in accordance with enterprise procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- using instruments for qualitative and/or quantitative analysis
- interpreting test methods and procedures
- sample preparation procedures
- performing calibration checks
- metrology techniques underpinning test/procedure including estimating uncertainty
- using instruments for qualitative and/or quantitative analysis
- maintaining and evaluating reagents
- troubleshooting basic equipment/method
- preparing calibration graphs and calculating results using appropriate units and precision
- applying theoretical knowledge to interpret gross features of data and make relevant conclusions such as identifying atypical results as out of normal range or an artefact
- tracing and sourcing obvious causes of an artefact
- recording and communicating results in accordance with enterprise procedures
- maintaining security, integrity, traceability of samples, sub-samples, test data, results and documentation

Required knowledge

Required knowledge includes:

- mechanical principles and concepts underpinning the test/procedure
- purpose of tests
- metrology techniques underpinning test/procedure
- principles and concepts related to equipment/instrument operation and testing
- function of key components of the equipment/instrument
- effects on test of modifying equipment/instrument variables
- sample preparation procedures
- basic equipment/method troubleshooting procedures
- calibration procedures
- calculation steps to give results in appropriate units and precision
- enterprise and/or legal traceability requirements
- relevant health, safety and environment requirements

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • interpret test methods/procedures accurately • prepare and test samples in accordance with specified methods • perform calibration checks (if required) • safely operate test equipment/instruments to enterprise standards and/or manufacturer's specifications • apply basic knowledge of physical properties of materials to interpret gross features of data and make relevant conclusions • identify atypical results, such as out of normal range or an artefact • trace and source obvious causes of an artefact • communicate problems to a supervisor or outside service technician • record and communicate results in accordance with enterprise procedures • maintain security, integrity and traceability of samples, sub-samples, test data/results and documentation.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL924001A Process and interpret data*. Resources may include: • standard laboratory equipped with appropriate test equipment/instruments, standards and materials • enterprise procedures and standard methods.
Method of assessment	The following assessment methods are suggested: • review of test data/results obtained by the candidate over a period of time to check accuracy, consistency and timeliness of results

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	• review of test records and workplace documentation completed by the candidate • observation of candidate conducting a range of mechanical tests and sample preparation procedures • feedback from peers and supervisors • oral or written questioning of mechanical principles and concepts, test methods and enterprise procedures. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. **Construction materials** A technical assistant is responsible for compressive strength testing of concrete cylinders. Typically, there are 20 to 30 to be tested each day. On arrival in the morning the assistant records the maximum and minimum temperatures of the curing tanks, locates the particular cylinders to be tested and removes them from the tanks. She/he dries each cylinder, weighs it and measures its diameter and length using a comparator gauge. The ends are checked for excessive roughness and non-parallelism. She/he then starts the compression test machine and checks that the load pacer is set to the correct loading rate. She/he places a rubber cap on the finished end of each cylinder in turn and places it centrally on the platen of the load frame. The assistant closes the protective screen, applies load at the specified rate until failure occurs, and records the maximum load. After the

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EVIDENCE GUIDE	
	cylinder has failed, the assistant removes it from the platen and checks for invalid failure modes. When this occurs (e.g. a shear failure) she/he puts the cylinder aside for further investigation. Any debris is removed from the platen and the next cylinder is tested. When all cylinders have been tested, the assistant cleans away any material left on the compression machine and switches it off. She/he enters all the data in into the laboratory information management system (LIMS) which calculates the unit mass and ultimate compressive strength of each cylinder. Finally, the assistant reviews the data for unusual or unexpected results that may indicate an error. **Manufacturing** A technician is asked to test a new polymeric material that is to be used to manufacture children's toys. The technician makes several representative test pieces and measures the elastic properties of the polymer as well as the durability of the polymer to flex many times without cracking. Because the polymer is to be used in a toy, the technician also dispatches samples of the polymer for chemical testing by a consulting laboratory to determine whether any toxic monomer could leach out if a child sucked the toy.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards, such as:
	  • AS 1012 Methods of testing concrete
	  • AS 1289 Methods for testing soils for engineering purposes
	  • AS ISO 1000-1998 The international system of units (SI) and its application
	  • AS ISO 17025-2005 General requirements for the competence of testing and calibration laboratories
	  • AS/NZS 2243 Set:2006 Safety in laboratories set
	  • AS/NZS ISO 9000 Set:2008 Quality management systems set
	  • ISO 5269 Pulps - Preparation of laboratory sheets for physical testing
	  • ISO 9142:2003 Adhesives - Guide to the selection of standard laboratory ageing conditions for testing bonded joints
	• Australian code of good manufacturing practice for medicinal products (GMP)
	• calibration and maintenance schedules
	• data quality procedures
	• enterprise recording and reporting procedures
	• equipment startup, operation and shutdown procedures
	• material safety data sheets (MSDS)
	• material, production and product specifications
	• national measurement regulations and

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RANGE STATEMENT	
	guidelines • principles of good laboratory practice (GLP) • production and laboratory schedules • quality manuals, equipment and procedures manuals • SOPs
Mechanical principles and concepts underpinning the test/procedure	Mechanical principles and concepts underpinning the test/procedure may include: • matter, interatomic and intermolecular forces and states of matter • mass, weight, forces, pressure and energy • cohesive/adhesive forces, friction and slip resistance • elasticity, hardness, ductility, malleability, strength of materials, elastic limit, elastic moduli and ultimate stress • electrical concepts, including electric field, voltage, current, resistance and AC/DC • elasticity, hardness, strength of materials, plasticity, permeability and dispersion
Preparation of samples and test pieces	Preparation of samples and test pieces may include processes such as: • cutting • trimming • machining • etching
Mechanical tests and procedures	Mechanical tests and procedures may include: • adhesive strength • elastic properties and strength of materials • slip resistance and friction • viscosity and torque • creep and endurance • abrasion, hardness, impact, indent and penetration resistance • pressure and/or vacuum testing using manometers and load cells
Tests	Tests may include methods for: • control of starting materials, in-process materials and finished products

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RANGE STATEMENT	
	• investigation of sources of construction materials • basic troubleshooting of enterprise processes
Hazards	Hazards may include: • microbiological organisms and agents associated with soil • chemicals, such as acids and solvents • sharps and hand tools • flammable liquids and gases • cryogenics, such as dry ice and liquid nitrogen • fluids under pressure, such as steam and industrial gases • sources of ignition • disturbance or interruption of services • crushing, entanglement and cuts associated with moving machinery or falling objects
Hazard control measures	Hazard control measures may include: • ensuring access to service shut-off points • recognising and observing hazard warnings and safety signs • labelling of samples and hazardous materials • handling and storage for hazardous materials and equipment in accordance with labelling, MSDS and manufacturer's instructions • identifying and reporting operating problems or equipment malfunctions • cleaning equipment and work areas regularly using enterprise procedures • using personal protective clothing and equipment, such as hard hats, hearing protection, gloves, safety glasses, coveralls and safety boots • following established manual handling procedures • reporting abnormal emissions, discharges and airborne contaminants, such as noise, light, solids, liquids, water/waste water, gases, smoke, vapour, fumes, odour and particulates to appropriate personnel
Records	Records may include:

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RANGE STATEMENT	
	• test and calibration results • equipment use, maintenance and servicing history • faulty or unsafe equipment
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Testing

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MSL975007A Supervise sampling, inspections and testing at construction sites

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to supervise and direct the placement of materials such as soil, concrete and asphalt at a construction site. The unit involves confirming the requirements of the inspection and testing plans, liaising with site personnel and organising sampling and testing activities, collecting reliable data and reporting results. Personnel are also expected to interpret results in the field, provide reliable advice to construction personnel, recognise and rectify obvious errors or unexpected results and troubleshoot common problems.

Application of the Unit

Application of the unit	This unit of competency is applicable to technical officers working in the construction materials testing sector. This unit of competency is typically performed by experienced technicians or engineering paraprofessionals, who often supervise or direct less experienced technical personnel. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These can be found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		
	MSL954001A	*Obtain representative samples in accordance with sampling plan*
	MSL973009A	*Conduct field-based acceptance tests for construction materials*

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for on-site operations	1.1. Identify the job, consult with the client and obtain relevant information, including the level of supervision required, drawings and specifications 1.2. Select equipment and materials required for the job 1.3. Identify site hazards and the personal protective equipment and safety procedures specified for job 1.4. Organise site induction for self and support personnel as required 1.5. Record description of the job to be undertaken, compare with specification and resolve any variations 1.6. Select suitable transport for site access 1.7. Brief support personnel on job-specific requirements
2. Establish on-site operations	2.1. Consult with the site superintendent to determine methods of communication, roles, responsibilities and expectations of each party, including identification of potential problems and conflicts 2.2. Set up facilities for supervision, testing and sample storage 2.3. Inspect the site to determine the characteristics of the project, including survey control points 2.4. Design inspection, sampling and testing program in accordance with specifications
3. Supervise materials placement	3.1. Conduct inspection, sampling and testing in accordance with project requirements 3.2. Direct and advise the site superintendent based on test results and observations 3.3. Record test data and observations in accordance with enterprise practices 3.4. Remit samples to the base laboratory for testing as required 3.5. Ensure cleaning of equipment does not cause environmental damage 3.6. Supervise the removal of equipment and materials from site
4. Analyse project data and report to client	4.1. Report test results to site superintendent at specified intervals 4.2. Analyse project data and provide reports to client in the agreed format and at agreed times

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ELEMENT	PERFORMANCE CRITERIA
5. Maintain enterprise records	5.1. Ensure site results are documented in accordance with enterprise practices 5.2. Maintain security and confidentiality of enterprise information 5.3. Prepare and issue a final project report detailing supervision and testing carried out, statement of compliance and relevant tables and plans as required
6. Promote a safe work environment	6.1. Promote the use of safe work procedures and protective equipment 6.2. Minimise environmental impacts of testing/sampling and generation of waste 6.3. Promote the collection and disposal of all waste in accordance with enterprise procedures

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Required Skills and Knowledge

Required skills include:

- identifying and describing materials used in civil construction
- directing materials placement operations
- reading and interpreting site plans, specifications and codes to determine sampling locations and frequencies
- identifying and locating sampling and testing sites and taking representative samples
- setting up and maintaining tools and equipment
- measuring and estimating elevations, lengths, areas and volumes
- observing and recording project information in writing, by sketching and photography
- using tools and equipment to perform required sampling and insitu testing
- working safely with equipment and around civil construction plant and sites
- driving safely on and off-road
- cleaning equipment before leaving site in compliance with environmental authority requirements
- handling, transporting and storing samples
- comparing test results with specifications
- resolving problems appropriately
- seeking advice about problems beyond technical competence from appropriate personnel
- report writing
- using computer software to create/maintain databases and produce detailed reports

Required knowledge

Required knowledge includes:

- engineering properties of civil construction materials relevant to job role
- techniques used in civil construction
- plant and equipment used in civil construction
- insitu and laboratory test methods and their application to various materials
- roles and responsibilities for different levels of supervision
- relevant health, safety and environment requirements

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • direct sampling and testing in accordance with inspection and testing plans • compare test results with specifications and draw valid conclusions on compliance • communicate problems to appropriate personnel and resolve problems constructively.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. It is strongly recommended that assessment is conducted through observation over time. The timeframe must allow for adequate assessment of operation under all normal and a range of abnormal conditions. Where this is not practical, additional assessment techniques must be used. This unit of competency may be assessed with: • *MSL915001A Provide information to customers* • *MSL915002A Schedule laboratory work for a small team* • *MSL925001AAnalyse data and report results*. Resources may include: • access to construction sites, tools, equipment and materials • enterprise procedures, sampling plans, test methods and equipment manuals.
Method of assessment	The following assessment methods are suggested: • inspection of workplace documents completed by the candidate • review of work outputs over a period of time to ensure accuracy, consistency and timeliness • feedback from peers and supervisors • use of suitable simulation and/or a range of case studies/scenarios.

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EVIDENCE GUIDE	
	In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. **Construction materials (1)** A geotechnical consultancy company has been contracted to provide level-one supervision for a commercial development in accordance with *AS3798 - Guidelines on earthworks for commercial and residential developments*. This will involve the construction of roadways, building pads and parking areas for heavy vehicles. A senior technician has been placed in charge of the project with an experienced tester to assist with routine testing and supervision. The principal contractor has provided copies of specifications, drawings and local authority requirements for this type of project. The project will involve clearing and stripping, setting-out (by contract surveyors), cut-to-fill, drainage, sewer lines and other services and construction of roadways and building pads.The supervision will be carried out in accordance with local authority requirements. Testing will involve measuring insitu densities of fill (including trench backfill) and road base materials. California Bearing Ratio (CBR) tests will be used as an aid in determining pavement thicknesses. Additional tests will be used to monitor the quality of pavement materials supplied from a local quarry. This will involve both on-site and off-site testing and require liaison with off-site personnel to ensure that the testing is timely and

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EVIDENCE GUIDE	
	as specified. Based on test results and direct observations, the technician is able to direct and advise the contractor's operators so that the materials are correctly placed and compacted. Test locations are marked on drawings and sketches and photographs used to record details of the project. Detailed daily records are used to prepare monthly reports for the contractor, accompanied by test certificates. Office staff use this information to invoice the client. The technician monitors the project to avoid exceeding the project budget. When the project is finished, the technician prepares a completion report, including all test results, site observations and a scale drawing showing all filled areas and reviews the information as a guide to planning and costing future projects. **Construction materials** (**2**) A concrete supply company has been contracted to provide supervision and technical support for a high-rise commercial development. This will involve pumping concrete for placement up to forty floors. A senior technician has been placed in charge of the project with an experienced tester to assist with routine testing and supervision. The principal contractor has provided copies of specifications and drawings. The project will involve supervising the placement of concrete. Testing for consistency will be required for each truckload. Compressive strength cylinders and a flexure beam will be required for every fifth trucklload and a shrinkage bar for each day's production.This will involve both on-site and off-site testing and require liaison with off-site personnel to ensure that the testing is timely and as specified. Based on test results and direct observations, the technician is able to direct the batch plant how to adjust the mix to improve its pumpability and advise the contractor's operators so that the materials are correctly placed and compacted. **Construction materials** (**3**) Anasphalt supply company has been contracted to provide supervision and technical support for a runway upgrade at a major regional airport. This will involve laying asphalt so that airport operations are not impeded. A senior technician has been placed in charge of the project with an experienced tester to assist with routine testing and supervision. The principal contractor has

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EVIDENCE GUIDE	
	provided copies of specifications and drawings and a Gantt chart showing the critical stages of the project. Testing for asphalt temperature will be required for each truckload. Nuclear density tests and core samples will be required for each lot.This will involve both on-site and off-site testing and require liaison with off-site personnel to ensure that the testing is timely and as specified. Based on test results and direct observations, the technician is able to advise the contractor's operators so that the materials are correctly placed and compacted.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **Procedures and/or enterprise requirements may include**:	• Australian and international standards, such as:
	  • AS ISO 1000-1998 The international system of units (SI) and its application
	  • AS ISO 17025-2005 General requirements for the competence of testing and calibration laboratories
	  • AS/NZS ISO 14000 Set:2005 Environmental management standards set
	  • AS/NZS ISO 9000 Set:2008 Quality management systems set
	• calibration and maintenance schedules
	• enterprise recording and reporting procedures
	• environmental legislation and regulations
	• equipment manuals
	• equipment startup, operation and shutdown procedures
	• industry codes of practice
	• material, production and product specifications
	• National Association of Testing Authorities (NATA) documents regarding construction materials testing
	• occupational health and safety (OHS) national standards and codes of practice
	• production and laboratory schedules
	• quality manuals
	• standard operating procedures (SOPs)

Tools and equipment	Tools and equipment used may include: • sampling equipment including moulds and coring equipment • hand tools, including shovels, crowbars,

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RANGE STATEMENT	
	scoops, spanners, wrenches and tape measure • consumables, including sample bags and labels • documentation, including maps, plans, contract documents and worksheets • field test equipment, including nuclear moisture/density gauge, dynamic cone penetrometers and slumping equipment • still/video camera • two-way radio and mobile telephone • levelling equipment and global positioning system (GPS) receiver
Site hazards	Site hazards may include: • solar radiation, dust and noise • manual handling of heavy materials and equipment • falling objects, slips, trips and fall hazards • vehicular and pedestrian traffic
Safety procedures	Safety procedures may include: • use of material safety data sheets (MSDS) • use of personal protective equipment, such as hard hats, hearing protection, sunscreen, gloves, masks, goggles, coveralls, safety boots and high visibility clothing • handling, and storage of hazardous materials and equipment in accordance with labels, MSDS, manufacturer's instructions, enterprise procedures and regulations • regular cleaning of equipment and vehicles • machinery guards • signage, barriers, flashing lights and traffic control
Typical problems	Typical problems include: • uncooperative site personnel • non-conformances leading to confrontation with other personnel • delays in obtaining test results • damage to services, materials and site conditions • displaced, missing and inaccurate survey markers

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RANGE STATEMENT	
	• misidentification of samples and sampling locations • equipment breakdown and breakage • environmental problems and issues, including site access, inclement weather, traffic, wildlife, vegetation and construction activities
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Testing

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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Co-requisite units		

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MSL975016A Perform complex tests to measure engineering properties of materials

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to prepare test specimens and perform multi-stage mechanical tests on them. The unit requires personnel to create test conditions that suit the materials intended use, optimise measurement procedures and recognise critical measurement points during the tests. The unit also covers data analysis and troubleshooting procedures/equipment that have led to atypical data or results.

Application of the Unit

Application of the unit	This unit of competency is applicable to laboratory personnel in the construction materials, mining and manufacturing industry sectors. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting, at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		
	MSL974012A	*Perform tests to determine the properties of construction materials*
		AND
	MSL973010A	*Conduct laboratory-based acceptance tests for construction materials*
		OR
	MSL973001A	*Perform basic tests*

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Interpret and schedule test requirements	1.1. Review test request and sample documentation to identify required test parameters and intended use of bulk material 1.2. Identify hazards and enterprise control measures associated with the sample, preparation/testing methods and equipment 1.3. Inspect samples, compare with specifications, record and report discrepancies 1.4. Liaise with client when samples and/or request forms do not comply with enterprise procedures 1.5. Match required parameters with suitable test methods, available equipment and instrument specifications 1.6. Plan parallel work sequences to optimise throughput of multiple sets of samples, as required
2. Prepare and measure test specimens	2.1. Prepare test specimens in accordance with test method 2.2. Conduct preliminary measurements to establish initial dimensions and conditions 2.3. Store test specimens and residual sample materials to maintain their integrity
3. Check equipment before use	3.1. Set up equipment/instruments in accordance with test method 3.2. Perform pre-use and safety checks in accordance with enterprise procedures and manufacturers specifications 3.3. Identify faulty or unsafe components and equipment and report to appropriate personnel 3.4. Check calibration status of equipment and quarantine out of calibration or faulty items
4. Test samples	4.1. Position and secure test specimen in test equipment/instrument 4.2. Conduct preliminary measurements to determine optimum test conditions and instrument settings 4.3. Perform each measurement stage in sequence, terminating each stage at the appropriate end point 4.4. Record all test measurements, observations and factors that may impact on quality of results 4.5. Remove test piece and conduct post-test measurements

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ELEMENT	PERFORMANCE CRITERIA
	4.6. Shut down equipment and store used test pieces in accordance with enterprise procedures
5. Process and analyse data	5.1. Confirm data is the result of valid measurements 5.2. Perform required calculations and ensure results are consistent with estimations and expectations 5.3. Record results with the appropriate accuracy, precision and units 5.4. Estimate and document uncertainty of measurement in accordance with enterprise procedures, if required 5.5. Analyse trends in data and/or results and report out of specification or atypical results promptly to appropriate personnel 5.6. Troubleshoot procedure or equipment problems which have led to atypical data or results
6. Maintain a safe work environment	6.1. Use established safe work practices to ensure personal safety and that of other laboratory personnel 6.2. Minimise the generation of wastes and environmental impact 6.3. Ensure the safe disposal of laboratory wastes 6.4. Clean, care for and store equipment and consumables in accordance with enterprise procedures
7. Maintain laboratory records	7.1. Enter approved data and results into laboratory information management system 7.2. Maintain security and confidentiality of enterprise information and laboratory data 7.3. Maintain equipment and calibration logs in accordance with enterprise procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- interpreting client requests, complex tests and sample preparation methods accurately
- applying enterprise procedures
- planning work sequences involving multiple/parallel tasks
- interpreting safety information, such as material safety data sheets (MSDS) and working safely
- checking and using test equipment in accordance with enterprise procedures
- maintaining concentration and applying multi-stage test methods accurately
- estimating/calculating scientific quantities (e.g. total and effective stress, strain and pressure)
- using calibration charts
- interpreting significant features of data and graphs and making logical conclusions
- identifying atypical data, errors and unexpected results and tracing any obvious causes
- recording and presenting results accurately and legibly
- maintaining security, integrity and traceability of all samples/test pieces, data/results and technical records
- cleaning and maintaining equipment
- seeking advice from a supervisor
- communicating with clients or outside service technician
- demonstrating a professional approach and positive company/organisation image

Required knowledge

Required knowledge includes:

- complex test methods routinely used in job role, including:
  - purpose and principles of test
  - relationship between the engineering properties and uses of construction materials
  - key sample preparation stages
  - key treatment/measurement stages
  - calculation steps to give results in appropriate units and precision
  - expected values for sample type
  - sources of uncertainty and methods for their control
- principles and concepts underpinning the test method, such as:

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REQUIRED SKILLS AND KNOWLEDGE
• stress, strain, pressure, total and effective stress, fatigue, creep, failure modes of materials, strength/consolidation of materials and permeability • electrical safety concepts including voltage, current, resistance, conductors/insulators and AC/DC • principles and concepts related to equipment/instrument operation including the function of key components and effects on test of modifying variables • pre-use checks and operating procedures for test equipment/instruments routinely used in job role • basic equipment/method troubleshooting procedures • enterprise and/or legal traceability requirements for samples, test pieces, test data and results • procedures for recording and reporting test results, calculations, test observations and unexpected or atypical results and equipment problems • health, safety and environmental management requirements relevant to job role • confidentiality requirements relevant to job role

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • select test methods, operating parameters and test ranges to suit the material and its intended use • prepare and orient test pieces precisely • safely set up, start up and shut down equipment • maintain close attention to measurement procedures, accuracy and precision during lengthy complex tests • calculate/determine required engineering properties with appropriate accuracy, precision and units • recognise atypical data/results and trace artefacts and problems with procedures or equipment • record and report data/results in accordance with enterprise procedures • maintain security, integrity and traceability of all samples, test pieces and documentation.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL925001A Analyse data and report results*. Resources may include: • engineering materials testing laboratory with appropriate test equipment, instruments and samples • SOPs and test methods.
Method of assessment	The following assessment methods are suggested: • review of results obtained by the candidate over a period of time to ensure accurate and consistent results are obtained within required timelines • inspection of testing records and workplace documentation completed by the candidate • observation of candidate conducting a range of complex tests on engineering materials • feedback from clients, peers and supervisors • oral or written questioning.

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EVIDENCE GUIDE	
	In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case study below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. **Construction materials** A consulting company is investigating a possible dam site and needs to assess a particular soil in the foundation. They request a geotechnical testing authority to determine the permeability of the soil. A senior technician checks the client request and inspects the soil sample, noting that it is plastic, clay and fissured. He/she checks the dam design parameters and notes that the overburden pressure will be 500 kPa. The senior technician uses a triaxial permeability test using a constant head configuration. He/she trims a cylindrical test piece, determines the sample's bulk density and uses the trimmings to determine its moisture content. The test piece is mounted in a triaxial test cell and the equipment carefully de-aired. All pressure gauges, regulators and transducers are checked and the equipment is leak tested. A confining stress is applied and after allowing the sample to come to equilibrium, it is back saturated. The cell pressure is increased to 500 kPa and as the sample consolidates, the technician monitors the sample volume change and pore water pressure. A differential pressure is applied in stages and the water flow through the sample is optimised. After reaching a steady state the flow rate is monitored to

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EVIDENCE GUIDE	
	determine the sample permeability. After taking sufficient readings to ensure a valid measurement, the senior technician prepares plots of permeability and time and reports the steady state values. After completing the test, he/she shuts down the equipment in the recommended sequence, cleans and restores all items. He/she then removes the test piece and determines the after-test moisture content.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards, such as:
	  • AS ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories
	  • AS 1289 Methods of testing soils for engineering
	  • AS 1012 Methods of testing concrete
	  • AS 2981 Methods of sampling and testing asphalt
	  • DIN 19683 series - Soil testing in agricultural hydrology - Physical laboratory tests
	  • ISO/IEC Guide 98-3:2008 Uncertainty of measurement - Part 3 Guide to the expression of uncertainty in measurement (GUM)
	• National Association of Testing Authorities (NATA) supplementary requirements for the relevant field of testing
	• NATA technical notes and guides
	• MSDS
	• standard operating procedures (SOPs)
	• quality manuals, equipment and procedures manuals
	• equipment startup, operation and shutdown procedures
	• calibration and maintenance schedules
	• enterprise recording and reporting procedures

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RANGE STATEMENT	
	• production and laboratory schedules • material, production and product specifications
Preparation of samples	Preparation of samples may include: • moisture conditioning and compaction of soil • trimming to required size and shape • orientation of test pieces • polishing • curing concrete test pieces
Test methods and procedures	Test methods and procedures may include: • consolidation of soil (e.g. one-dimensional and triaxial) • shear testing of soil and rock (e.g. total stress, effective stress, direct stress and triaxial stress) • permeability of soil, rock and concrete (e.g. falling head and constant head) • California Bearing Ratio (CBR) (4 point) • fatigue and creep of metals, polymers and concrete • wheel tracking in asphalt • stiffness and creep of asphalt
Hazards	Hazards may include: • microbiological organisms and agents associated with soil • chemicals, such as acids and solvents • sharps and hand tools • flammable liquids and gases • cryogenics, such as dry ice and liquid nitrogen • fluids under pressure such as steam and industrial gases and hydraulics • disturbance or interruption of services • crushing, entanglement and cuts associated with moving machinery or falling objects
Hazard control measures	Hazard control measures may include: • ensuring access to service shut-off points • recognising and observing hazard warnings and safety signs • labelling of samples, hazardous materials and equipment • machinery guards

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RANGE STATEMENT	
	• handling and storage for hazardous materials and equipment in accordance with labelling, MSDS and manufacturer's instructions • identifying and reporting operating problems or equipment malfunctions • cleaning equipment and work areas regularly using enterprise procedures • using personal protective clothing and equipment, such as hard hats, hearing protection, gloves, safety glasses, coveralls and safety boots • following established manual handling procedures • reporting abnormal emissions, discharges and airborne contaminants such as noise, light, solids, liquids, water/waste water, gases, smoke, vapour, fumes, odour and particulates to appropriate personnel
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Testing

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Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MSL953001A Receive and prepare samples for testing

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to log samples, check sample documentation, schedule and prepare samples for testing in accordance with enterprise procedures. This unit does not include testing, tissue processing or similar techniques.

Application of the Unit

Application of the unit	This unit of competency is applicable to field and laboratory assistants in all industry sectors who receive and prepare samples as part/all of their jobs in a sample reception area. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Log samples	1.1. Record date (and time of arrival, if required) of samples at enterprise 1.2. Check and match samples with request forms before they are accepted 1.3. Enter samples into the laboratory information management system (LIMS) 1.4. Apply required document tracking mechanisms 1.5. Process 'urgent' test requests according to enterprise requirements 1.6. Ensure security and traceability of all information, laboratory data and records
2. Address customer service issues	2.1. Report to referring client when samples and request forms do not comply with enterprise requirements 2.2. Refer to supervisor for instruction where 'return to source' is inappropriate or not possible 2.3. Maintain confidentiality of all client/enterprise data and information 2.4. Ensure that information provided to customers is accurate, relevant and authorised for release 2.5. Deal with customers politely and efficiently and in accordance with enterprise procedures
3. Prepare samples for testing	3.1. Perform physical separation of the samples, as required 3.2. Prepare the required number of sub-samples 3.3. Perform chemical separation of the samples as required 3.4. Place samples in appropriate transport media, if appropriate 3.5. Monitor and control sample conditions before, during and after processing
4. Distribute samples	4.1. Group samples requiring similar testing requirements 4.2. Distribute samples to work stations maintaining sample integrity 4.3. Distribute request forms for data entry or filing in accordance with enterprise procedures 4.4. Check that samples and relevant request forms have been received by laboratory personnel
5. Maintain a safe work	5.1. Apply safe work practices to ensure personal safety

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ELEMENT	PERFORMANCE CRITERIA
area and environment	and that of other laboratory personnel 5.2. Use appropriate protective equipment to ensure personal safety when sampling, processing, transferring or disposing of samples 5.3. Report all accidents and spillages to supervisor 5.4. Clean up splashes and spillages immediately using appropriate techniques and precautions 5.5. Minimise the generation of wastes and environmental impacts 5.6. Ensure the safe disposal of hazardous materials and other laboratory wastes

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- receipt and logging in of samples
- checking of samples for history and acceptable transport conditions
- preparing and sub-sampling of samples
- labelling samples accurately and completely
- using standard precautions when dealing with potentially hazardous materials
- applying knowledge of the relationship between specific sample preparation and associated tests
- clarifying specific client requirements with appropriate personnel promptly
- labelling and storing samples in a way which maintains sample integrity and traceability
- disposing of samples following required procedures
- maintaining equipment and the workspace

Required knowledge

Required knowledge includes:

- enterprise procedures for the receipt, documentation, distribution and storage of samples
- potentially hazardous and unstable nature of samples
- requirement of specified sample types for specific tests
- importance of maintaining effective customer relations
- sample storage and transport requirements
- relevant health, safety and environment requirements

Specific industry

Additional knowledge requirements may apply for different industry sectors. For example:Biomedical laboratories:

- potentially infective nature of all biological materials
- nature of unstable solutions, such as anti-coagulated whole blood
- non-conformance of clotted samples for procedures, such as routine haematological tests

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • safely receive and log samples in accordance with enterprise procedures • apply knowledge of the relationship between sample preparation requirements and associated tests • deal with customers politely and efficiently • recognise and deal with problems according to enterprise procedures • maintain sample integrity and traceability.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL913001A Communicate with other people* • *MSL943002A Participate in laboratory/field workplace safety*. Resources may include: • a selection of sample containers, tubes, request forms and sample documentation • simulated samples when an authentic sample is unavailable or inappropriate.
Method of assessment	The following assessment methods are suggested: • review of sample receipt and preparation records prepared by the candidate • feedback from supervisors and peers • direct observation of sample receipt and preparation • questioning to assess knowledge of procedures where direct observation is difficult (such as sample receipt and preparation in the field). In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly.

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EVIDENCE GUIDE	
	Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and show its relevance in a workplace setting. **Environmental** A laboratory assistant at a hazardous liquid waste recycling plant is required to log in all samples, match all samples with the in-house profile of the source of the waste, label them and activate the tracking procedure. He/she then prepares a sample for a series of standard tests which are determined by the profile of the waste material (acid or alkali, organic or heavy metal, etc). Given the hazardous nature of the waste, the laboratory assistant must use appropriate safety equipment at all times and ensure the safe disposal of all hazardous material. The assistant must work efficiently as these procedures are activated upon arrival of a road tanker and when the hazardous waste has been verified and judged acceptable for treatment at the plant by the laboratory supervisor. The laboratory assistant also liaises with the truck driver, or the referring client, should the samples (and/or subsequent tests) not comply with enterprise conditions for receiving the hazardous waste. **Construction materials testing and mineral assay** A laboratory assistant has received a consignment of disturbed soil samples from a client for classification testing. A test request and field logs have been sent by mail. Each sample is bagged and labelled, with the label showing the name of the client, project, date and sampling location, and a field description of the material. The laboratory policy is that samples weighing more than 20 kg must be bagged so that the individual bags do not exceed this limit and labelled as bag 1 of ..., bag 2 of ...,

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EVIDENCE GUIDE	
	etc. The assistant checks to ensure all component bags of such samples are present. He/she is careful to handle the samples using safe manual handling techniques. The assistant arranges the samples in order of location and reconciles them with the test request and logs. Two samples have been shown on the request but have not been received. The assistant emails the technician who despatched them and subsequently is advised that they were overlooked during despatch and will be forwarded as soon as possible. The assistant compares the samples with the field descriptions and finds that they match. Samples that are not designated for testing immediately are set aside in the laboratory store. The remainder are placed in trays for drying in the 50ºC oven. The tray numbers are carefully written on the respective worksheets. When the samples have dried and cooled they are split out sufficiently for sieve analysis and plasticity testing, making allowance for the maximum particle size of each sample. The assistant is careful to avoid raising dust during the process. **Biomedical** A laboratory assistant has just started a shift in specimen reception and puts on a coat and gloves before touching any samples. There is a pile of samples and forms in the sample box. In some cases, the samples and forms are enclosed in a plastic bag. In other cases, they are seemingly unconnected. The assistant notices that one of the samples has a bloodstained label. She/he quickly examines the samples, isolates the leaking sample in a lockable plastic bag and places the related request form in the bag's separate compartment. The assistant then disposes of her/his dirty gloves. The assistant now logs all samples into the computer, placing to one side a sample and request form that is inadequately labelled. She/he makes a note to call the referring doctor as soon as possible. The assistant places the haematology samples in the colour-coded tray and calls the laboratory for their pickup. She/he then calls the doctor of the patient whose sample is inadequately labelled. She/he records the missing date of birth on the request form, and then barcode/labels tubes for the samples' testing. Within 30 minutes, she/he has cleared the first rush of samples. She/he takes the time to carefully empty the bin of

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EVIDENCE GUIDE	
	wastes.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards such as:
	  • AS ISO 17025-2005 General requirements for the competence of testing and calibration laboratories
	  • AS/NZS 2243 Set:2006 Safety in laboratories set
	  • AS/NZS ISO 14000 Set:2005 Environmental management standards set
	• Australia Post Guides
	• Australian Dangerous Goods Code
	• Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) Codes of Practice
	• enterprise operating procedures for preparing samples
	• enterprise quality manuals
	• gene technology regulations
	• International Air Transport Association (IATA) Regulations
	• material safety data sheets (MSDS)
	• occupational health and safety (OHS) national standards and codes of practice
	• procedure sheets for physical and chemical separation
	• procedure sheets indicating how samples and sub-samples are to be labelled, processed, distributed, flagged for urgent testing or for other non-routine requirements, including referral to external laboratories

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RANGE STATEMENT	
	• procedure sheets indicating transport and storage requirements • safety manuals describing personal protective equipment requirements, control of hazardous wastes, containment and cleanup of spillages, and disposal and recycling of wastes
Samples received	Samples received may include: • gas or air samples • liquid samples, such as water and waste water, stormwater, sludges and complex mixtures and sewage • solid samples, such as soils and sediments, rocks/minerals, concrete, quarry or mining products • solid wastes, such as hazardous, non-hazardous, domestic, commercial, industrial, mining and agricultural • biological specimens such as tissue and blood • raw materials, start, middle, end of production run samples and final products
Hazards	Hazards may include: • biohazards, such as micro-organisms and agents associated with soil, air, water, blood and blood products, and human or animal tissue and fluids • dust and noise • chemicals, such as acids and hydrocarbons • aerosols • sharps and broken glassware • manual handling of heavy sample bags and containers • crushing, entanglement and cuts associated with moving machinery
Safe work practices	Safe work practices may include: • use of MSDS • use of personal protective equipment, such as hard hats, hearing protection, gloves, safety glasses, goggles, face guards, coveralls, gowns, body suits, respirators and safety boots • use of biohazard containers and laminar flow cabinets

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RANGE STATEMENT	
	• correct labelling of reagents and hazardous materials • handling, and storing hazardous materials and equipment in accordance with labels, MSDS, manufacturer's instructions, and enterprise procedures and regulations • regular cleaning and/or decontamination of equipment and work areas
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Sampling

Competency field

Competency field	

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Co-requisite units

Co-requisite units		

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MSAPMSUP172A Identify and minimise environmental hazards

Modification History

Not applicable.

Unit Descriptor

Unit descriptor
This competency covers the awareness of environmental issues and organisation environmental policies and procedures to minimise environmental threats.

Application of the Unit

Application of this unit
This competency is performed by all operators in all plants. It reflects the regulatory requirements and the industry's concern to operate in an environmentally friendly manner. The operator will:

- identify activities/materials likely to be an environmental issue
- take the appropriate action on environmental issues as required.
-

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisites
This unit has **no** prerequisites.
Individual organisations may choose to add prerequisites and co-requisites relevant to their processes.

Employability Skills Information

Employability Skills
This unit contains employability skills.

Elements and Performance Criteria Pre-Content

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency	Performance Criteria describe the required performance needed to demonstrate achievement of the Element. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT ELEMENT	**PERFORMANCE CRITERIA** Performance Criteria describe the required performance needed to demonstrate achievement of the Element. Assessment of performance is to be consistent with the Evidence Guide.
1. Identify potential environmental threats.	1.1 Recognise the type and severity of environmental threat posed by the materials and processes used for own work. 1.2. Identify ways materials used may enter the environment. 1.3. Identify sensitive features of the local environment and their impact on work practice and procedures.
2. Identify workplace procedures and policies to minimise environmental threats.	2.1 Identify workplace policy for environmental protection. 2.2. Identify in relevant standard operating procedures environmental protection measures appropriate for work. 2.3. Explain contact procedures for personnel involved in environmental response teams. 2.4. Recognise abnormal or unacceptable emission levels.
3. Follow procedures to minimise environmental threats.	3.1 Implement environmental protection measures in relevant procedures. 3.2. Report abnormal emissions/environmental issues to appropriate personnel. 3.3. Apply containment procedures in accordance with SOPs where appropriate. 3.4. Implement approved waste management procedures and practices. 3.5. Follow approved safety procedures and use personal protective equipment as specified in procedures.

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Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit.
Knowledge and understanding is required of organisation environment protection systems, procedures and equipment sufficient to for work activities.
Knowledge is required of organisation standard procedures and work instructions and relevant regulatory requirements, along with the ability to implement them within appropriate time constraints and in a manner relevant to the operation of the system.
Competenceincludes an awareness of:

- internal environmental control standards
- severity of environmental risks from materials and work processes used
- likely impact on the environment of materials and process.

Competency also includes an awareness of the local environment and environmental issues such as:

- sensitive waterways/wetlands
- flows from the plant to the environment (eg through sandy soil, local creek)
- particular environmental threats posed by materials and processes used and the work practices required to minimise these threats.

Also required is the ability to:

- communicate using in-plant reporting systems - verbal, electronic and written
- initiate first response to an environmental incident in accordance with SOPs
- use containment equipment
- use personal protective equipment
- use other required resources.

Language, **literacy and numeracy requirements**
This unit requires the ability to read and understand typical product specifications, job sheets, procedures and work instructions, material labels and safety information as provided to operators.
Writing is required to the level of completing workplace forms.
Basic numeracy is required to the extent required by work instructions and procedures.

Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required skills and knowledge, the Range Statement and the Assessment Guidelines for this Training Package.
Overview of assessment
A holistic approach should be taken to the assessment.
Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.
Critical aspects for assessment and evidence required to demonstrate competency in this unit

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It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability toidentify actual and potential environmental breaches as appropriate to the job level.
Consistent performance should be demonstrated. For example, look to see that:

- standard procedures are followed
- deviations from desired conditions are recognised
- action specified in the standard procedures is carried out
- the impact of work practices/actions on the environment is understood.

Assessment method and context
Assessment will occur using a simulation and will occur in a work like environment. Competence in this unit may be assessed:

- by observation over time on a processing plant
- in a situation allowing the generation of evidence of the ability to respond to problems
- by using a suitable simulation and/or a range of case studies/scenarios
- through a combination of these techniques.

In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment. Assessors need to be aware of any cultural issues that may affect responses to questions.
Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.
Specific resources for assessment
This section should be read in conjunction with the Range Statement for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.
Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.

Range Statement

RANGE STATEMENT
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts. Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context
This competency applies to all work environments and sectors in the industries. Responses are restricted to a 'first response' approach, including the notifying of appropriate organisation personnel.

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Procedures
All operations are performed in accordance with procedures.
Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Tools and equipment
This competency includes use of equipment and tools such as:

- PPE
- spill kits.

Hazards
Typical workplace hazards include:

- chemicals and hazardous materials
- gases and liquids under pressure
- moving machinery
- materials handling.

Emissions/discharges
Typical emissions/discharges include:

- noise
- light
- odour
- gas
- smoke vapour
- liquid and solids
- particulates
- fumes.

Problems
Respond to routine problems means 'apply known solutions to a limited range of predictable problems'. Typical problems include:

- required information/materials not available
- required tool/equipment not available

Appropriate action for non-routine problems may be reported to designated person or other action specified in the procedures.

Unit Sector(s)

Not applicable.

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NWP331B Inspect conduit and report on condition and features

Modification History

Not applicable.

Unit Descriptor

Unit descriptor

This unit of competency describes the outcomes required to plan, prepare and conduct an inspection of gravity sewer or stormwater conduits, using specialised CCTV camera and transport systems, and reporting on observed defects and other features of the conduit in accordance with the industry code and job specifications. The ability to interpret technical information, identify and assess hazards, operate and maintain specialised technical equipment and produce computer generated reports on the condition and features of the conduit inspected are essential to performance.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge required for operators with a specific responsibility for: inspecting and reporting on the condition of operational gravity sewers and stormwater conduits and new or rehabilitated sewers or stormwater conduits; and operating and maintaining specialised CCTV inspection equipment in compliance with organisational and statutory requirements. This unit may also be applied to the inspection of other types of conduit system.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

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Employability Skills Information

Employability Skills This unit of competency contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1Plan and prepare for conduit inspection.	1.1 Identify the purpose of the inspection and the location, size, type and extent of the ***conduit assets*** from ***relevant documentation***.
	1.2 Determine the inspection method and ***equipment*** to be used according to ***organisational and statutory requirements***.
	1.3 Conduct and document hazard identification and risk assessment and implement appropriate ***risk control processes***.
	1.4 Establish and implement ***asset isolation*** / ***flow management plans*** and inspection schedules in consultation with the system operator.
	1.5 Arrange for ***preparation of the conduit and site for inspection*** as required.
2Operate and maintain equipment.	2.1 Set up and calibrate equipment to suit the size, type and conditions of conduit according to relevant ***industry codes and/or specifications***.
	2.2 Operate equipment according to relevant industry codes and/or specifications and examine, record and report ***features of the conduit*** accurately.
	2.3 Conduct routine maintenance of equipment in accordance with manufacturer's recommendations.
	2.4 Diagnose and correct equipment malfunctions.
	2.5 Recognise and appropriately respond to ***potential risks to equipment and/or system operation***.
3Identify and code defects and other features observed during conduit inspection.	3.1 Identify and code structural defects, service conditions and other features of the conduit according to relevant industry codes and/or specifications.
	3.2 Record asset and inspection ***data*** using approved data capture software according to relevant industry codes and/or specifications.
	3.3 Investigate and report unrecognisable defects, service conditions or other features.
	3.4 Identify a conduit at risk of imminent failure and communicate details to the system operator or owner according to organisational and statutory requirements.
	3.5 Identify and report defects or malfunctioning of access structures in accordance with industry codes and/or specifications.
4Withdraw inspection equipment and reinstate system operation.	4.1 Clean and inspect equipment for damage during and after withdrawal from the conduit.
	4.2 Reinstate system operation according to asset isolation / flow management plan and/or specifications.
	4.3 Restore work site to meet organisational, safety, property owner's

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ELEMENT	PERFORMANCE CRITERIA
	and environmental requirements.
5Review, **record and report work**.	5.1 Check inspection data and video records prior to removal of equipment for completeness, quality and accuracy.
	5.2 Compile ***conduit inspection reports*** and present to the client in the required format.
	5.3 Complete job documentation and communication according to the asset owner or operator's, and statutory requirements.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- identify structural defects, service conditions and other features in a range of different conduits
- apply industry inspection reporting code requirements
- use data capture software
- operate CCTV camera controls and recording systems
- identify and solve operational problems
- operate communication equipment
- access and interpret GIS data, interpret plans/maps, house service diagrams, instructions, specifications and standard operating procedures
- interpret policies, procedures and standards
- use safety equipment and personal protective equipment
- use tools and instruments associated with camera/transport operation, maintenance and calibration
- identify hazards
- give and receive instructions
- communicate with customers and other employees
- prepare and restore work site.

Required knowledge:

- industry inspection reporting code
- data capture, recording and reporting software
- occupational health and safety
- confined space entry procedures
- typical traffic control arrangements
- personal work site safety
- potential hazards and risk factors of operational processes
- equipment operation
- techniques of operation in unusual situations
- capabilities of camera, lights and transport system
- routine maintenance and calibration requirements of camera, lights and transport system
- effects of weather and conditions on operation of site or plant
- environmental aspects of operation and installation
- features of conduits used in Australia for gravity sewer and stormwater construction over the last 100 years
- construction and operation of sewerage and stormwater systems.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The candidate should demonstrate the ability to plan, prepare and conduct an inspection of gravity sewer or stormwater conduits including:

- preparing for conduit inspection by:
- identifying the location and extent of the work, methods to be applied, and equipment, including safety equipment, to be used
- assessing risks and preparing for hazards
- implementing appropriate isolation and inspection procedures
- calibrating equipment for conduit inspection
- operating and maintaining equipment
- conducting inspections and identifying and coding conduit defects and condition
- recording data manually, or using approved software program
- investigating and recording anomalies
- reporting conduit at risk of failure
- removing equipment and reinstating system operation
- restoring worksite
- completing and processing inspection information according to organisational procedures.

Context of and specific resources for assessment

Access to the workplace and resources including:

- documentation that should normally be available in a water industry organisation
- relevant codes, standards, and government regulations.

Where applicable, physical resources should include equipment modified for people with disabilities.

Access must be provided to appropriate learning and/or assessment support when required.

Assessment processes and techniques must be culturally appropriate, and appropriate to the language and literacy capacity of the candidate and the work being performed.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of

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EVIDENCE GUIDE

time reflecting the scope of the role and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice
- a decision of competence only taken at the point when the assessor has complete confidence in the person's competence over time and in various contexts
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the skill levels of the operator, any cultural issues that may affect responses to the questions, and reflecting the requirements of the competency and the work being performed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.

Conduit assets may include:

- pipes, including those manufactured from:
- vitrified clay (earthenware)
- reinforced concrete
- polyvinyl chloride (PVC)
- polyethylene
- polypropylene
- unlined cast iron
- cast iron cement lined
- asbestos cement
- ductile iron cement lined
- glass reinforced plastic
- mild steel cement lined
- profiled thin gauge steel
- other types of conduit, including:
- concrete box culverts
- circular or oviform brick
- circular or oviform cast in situ concrete
- circular, rectangular or variable cross section stone masonry block
- lined pipes
- other cross sections
- asset structures, such as:
- maintenance holes
- maintenance shafts
- drainage pits.

Relevant documentation may include:

- plans
- GIS asset data on digital media
- drawings
- 'house' service diagrams
- specifications
- work instructions.

Equipment used may include:

- specialised closed circuit television conduit inspection equipment and associated apparatus
- hand-held still camera

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RANGE STATEMENT

- computer hardware and software for data entry
- hand and power tools
- manhole cover lifters
- lifting and winching equipment
- mechanical excavation equipment
- pneumatic and motorised equipment:
- compressors
- pneumatic spades and attachments
- motorised cutting equipment
- on- and off-road vehicles
- road signage
- portable pumps
- sewer plugs - pneumatic, or other types
- communication equipment
- breathing apparatus
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment.

Organisational and statutory requirements may include:

- interpretation or assessment of:
- specifications
- instructions
- codes
- conduit size and configuration
- access to conduit
- sewerage or stormwater system operation.
- by-laws
- organisational policies
- standard operating procedures
- communication and reporting protocols
- environment protection
- occupational health and safety, including the use of personal protective equipment
- lifts and cranes
- mines and subsidence
- road signage
- electrical
- dangerous goods.

Risk control processes include:

- traffic control arrangements
- grating or barricading of openings
- asset isolation/flow control

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RANGE STATEMENT

	• compliance with confined space entry procedures • compliance with asset access procedures • personal protective equipment such as gloves • personal hygiene practices.
Asset isolation / flow management plans may include:	• arrangements with system operator or owner for: • shutting down, tagging and/or lockout of parts of the system, for example: • pumping stations • valves • reinstatement of operations • conducting inspections to coincide with low flow in the conduit • blocking off flow in a sewer and monitoring backup • blocking off flow and bypass pumping.
Preparation of the conduit and site for inspection includes:	• high pressure water jet cleaning to remove surface build-up on the wall of the conduit, roots and or debris • locating, exposing, removal and replacement of maintenance hole/pit covers or grates • arranging special access requirements, such as: • across private land • through gates • inside buildings • construction of platforms for above ground maintenance holes.
Industry codes and/or specifications may include:	• the Conduit Inspection reporting code of Australia WSA 05 2006 • other codes as nominated by the asset owner, operator or regulator • contract specifications for work activity.
Features of the conduit may include:	• structural condition • service condition.
Potential risks to equipment and/or system may include:	• loss of camera or equipment due to the condition of the conduit • backup of sewage caused by camera or equipment and/or sudden changes in flow.
Data recording may be conducted:	• manually • using approved data capture software.
Conduit evaluation reports may comprise:	• videotapes • log sheets • asset information such as plans, maps, asset location,

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RANGE STATEMENT

number, age and type
- photographs.

Unit Sector(s)

Not applicable.

Competency field

Competency field Collection and distribution

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NWP440A Supervise conduit inspection and reporting

Modification History

Not applicable.

Unit Descriptor

Unit descriptor This unit of competency describes the outcomes required to supervise or manage the inspection and reporting of the condition and features in sewer and stormwater conduits using specialised CCTV equipment.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge required for people who supervise or manage work involved in the inspection and reporting of the condition and features in sewer and stormwater conduits using specialised CCTV equipment. It is also applicable to people who prepare inspection reports from data supplied by specialised CCTV sewer inspection operators.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability Skills This unit of competency contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1Determine inspection reporting requirements	1.1 Determine the ***inspection reporting standard*** and ***special inspection and reporting requirements*** of the client or asset owner from specifications and/or instructions. 1.2 Obtain ***plans and maps of assets*** to be inspected and identify relevant asset data. 1.3 Seek clarification of inspection reporting requirements from the client/asset owner for unusual or non-routine inspections. 1.4 Verify the competence of operators undertaking the inspection.
2Review video images, data and reports from inspections.	2.1 ***Checkvideo records*** of inspections. 2.2 Compile documentation from inspection and check for completeness and accuracy. 2.3 Recognise unsatisfactory video images and other non-compliant data and submit non-compliance reports to the operator. 2.4 Label and reference inspection information according to specifications and/or enterprise procedures.
3Identify and code defects and other features from video images of conduit inspection.	3.1 Identify and code structural defects, service conditions and other features of the ***conduit*** in accordance with industry code and/or specifications. 3.2 Record asset and inspection data using appropriate software in accordance with industry code and/or specifications. 3.3 Investigate and report unrecognisable defects, service conditions or other features. 3.4 Identify a conduit at risk of imminent failure and communicate details to the system operator/asset owner according to ***operational procedures***. 3.5 Confirm defects or malfunctioning of maintenance holes, pits or other access structures with the operator and report in accordance with industry code and/or specifications.
4Prepare conduit inspection reports for client.	4.1 Compile ***inspection reports*** and present to the client in the format required by the industry code/specifications or enterprise practice. 4.2 Follow ***inspection video and data security procedures*** in accordance with the specifications and or enterprise procedures.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- identify structural defects, service conditions and other features in a range of different conduits
- apply industry inspection reporting code requirements
- use data capture software
- access and interpret conduit details from asset information systems (GIS), construction drawings, plans/maps, house service diagrams
- identify inspection reporting requirements in specifications
- interpret policies, procedures and standards
- communicate with clients and operators.

Required knowledge:

- industry inspection reporting code
- data capture, recording and reporting software
- asset information systems
- operational plans/maps
- design plans for construction
- features of conduits used in Australia or operating area for gravity sewer and stormwater construction over the last 100 years
- construction and operation of sewerage and stormwater systems.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The candidate should demonstrate the ability to supervise or manage the inspection and reporting of the condition and features in sewer and stormwater conduits using specialised CCTV equipment Including:

- identifying and correctly coding all critical defects and or features of conduits observable in inspection video records
- recognising poor quality, inaccurate and other non-compliant video images and data from conduit inspections
- interpreting correctly all relevant asset information on maps, plans and drawings of the conduit provided by the asset owner/operator/client.

Context of and specific resources for assessment

Access to the workplace and resources including:

- documentation that should normally be available in a water industry organisation
- relevant codes, standards, and government regulations.

Where applicable, physical resources should include equipment modified for people with disabilities.

Access must be provided to appropriate learning and/or assessment support when required.

Assessment processes and techniques must be culturally appropriate, and appropriate to the language and literacy capacity of the candidate and the work being performed.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice
- a decision of competence only taken at the point when the assessor has complete confidence in the person's competence over time and in various contexts
- all assessment that is part of a structured learning

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EVIDENCE GUIDE

experience must include a combination of direct, indirect and supplementary evidence

- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the skill levels of the operator, any cultural issues that may affect responses to the questions, and reflecting the requirements of the competency and the work being performed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.

Inspection reporting standards may include:

- Conduit inspection reporting code of Australia WSA 05 2006
- Australian conduit condition evaluation manual
- other enterprise or national reporting codes.

Special inspection and reporting requirements may include:

- pre-cleaning preparation of asset
- detailed inspection of certain defects and/or features in the conduit
- type and number of photographs / video clips of defects and or features
- measurement and reporting of operational or conduit parameters such as gas concentrations.

Plans and maps of assets may include:

- geographic information systems (GIS)
- construction drawings
- manual systems
- hard copy systems.

Checkvideo records includes:

- image quality
- completeness
- camera operation
- compliance with the inspection reporting standard and special inspection or reporting requirements.

Conduit may include:

- pipes manufactured from:
- vitrified clay (earthenware)
- reinforced concrete
- polyvinyl chloride (PVC)
- polyethylene
- polypropylene
- unlined cast iron
- cast iron cement lined
- asbestos cement
- ductile iron cement lined
- glass reinforced plastic
- mild steel cement lined
- profiled thin gauge steel
- other conduits include:

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RANGE STATEMENT

	• concrete box culverts • circular or oviform brick • circular or oviform cast in situ concrete • circular, rectangular or variable cross section stone masonry block • lined pipes or other cross sections • access structures such as: • maintenance holes • drainage pits • maintenance shafts.
Operational procedures may include:	• communication and reporting protocols • standard operating procedures • organisational policies.
Inspection reports may include:	• videotapes • CDs, DVDs or other digital media • computer generated reports in a variety of formats • asset information such as plans, maps, asset location, number, age and type • photographs.
Inspection video and data security procedures may include:	• backup copies of computer files • tracking of tapes and disks • authorised deletion of files.

Unit Sector(s)

Not applicable.

Competency field

Competency field Collection and distribution

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PMAOHS211B Prepare equipment for emergency response

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This competency unit covers the preparation and minor servicing of equipment used to respond to emergency situations.

Application of the Unit

Application of the unit	

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify emergency equipment.	1.1. Locate emergency equipment 1.2. Ensure access is provided to emergency equipment.
2. Inspect and assemble emergency equipment.	2.1. Inspect emergency equipment for faults or damage 2.2. Secure couplings/connections and operational condition 2.3. Assemble equipment in accordance with manufacturer specifications 2.4. Identify and report any missing or damaged components.
3. Carry out minor servicing of equipment.	3.1. Maintain and clean equipment according to specifications/procedures 3.2. Conduct servicing in accordance with specifications/procedures 3.3. Ensure equipment is 'made-ready' and stored in designated location 3.4. Ensure equipment functions in accordance with specifications.
4. Report and record equipment status.	4.1. Record and report equipment status 4.2. Raise maintenance requests as required 4.3. Undertake corrective actions as required.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
• hand skills • follow procedures • observation • completing records • assembling and operating various pieces of emergency response equipment • servicing various pieces of emergency response equipment • storing various pieces of emergency response equipment.
Required knowledge
Knowledge and understanding of the emergency response procedures and equipment, sufficient to recognise standard and non-standard situations with regards to the equipment used, and then determine the appropriate action which is consistent with operating guidelines. These include: • principles of operation of the emergency response equipment • hazards policies and procedures • emergency, fire and accident procedures. Knowledge of the relevant OHS and environmental requirements, and enterprise standard operating procedures (SOPs), along with an ability to implement them in a manner that is relevant to emergency response practices. These include procedures for the use of personal protective clothing and equipment.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios and role plays. This unit of competency requires a body of knowledge which will be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk- throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate action. The emphasis should be on the ability to minimise the affect of an emergency situation. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment in need of servicing are recognised • equipment is always 'made ready' • equipment is always stored in the designated location at all times when not in use • access to equipment is available at all times when not in use. These aspects may be best assessed using a range of scenarios/case studies/what ifs as the stimulus, with a walk through forming part of the response. These assessment activities should include a range of problems, including new, unusual and extreme situations that may have been generated from the past incident history of the plant, incidents on similar plants around the world, hazard analysis activities (eg HAZOP) and similar sources.
Context of and specific	Assessment will require access to an operating plant over an

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EVIDENCE GUIDE	
resources for assessment	extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork, OHS and communication units.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This unit of competency includes all items of equipment that are required for emergency response.
Emergency response equipment	Emergency response equipment may include: • fire extinguishers • fire hoses • fire blankets • pumps • branches, fittings and nozzles • foam equipment/units • personal protective clothing • breathing apparatus • deluge/safety showers.
Functions	Required functions include: • inspections • visual • mechanical • servicing • lubrication • pressure checks • refilling • communication • maintenance • external authorities.
Hazards	Hazards may include: • chemicals and hazardous materials • gases and liquids under pressure • moving machinery • materials handling

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RANGE STATEMENT	
	• working at heights, in restricted or confined spaces, or • environments subjected to heat, noise, dusts or vapours.
Emergency situations	Emergency situations may include: • accidents • fires • chemical or oil spills • gas leak or vapour emission • utilities failure • bomb scares.
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit sector	HSE

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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PMAOMIR444B Develop incident containment tactics

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit covers the competency required in the development of tactics that are to be used in the containment of incidents in on-shore and off-shore facilities. The person would typically be an incident coordinator who would respond to the incident manager.

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Application of the Unit

Application of the unit	In a typical scenario the person must ensure that the tactics proposed to be employed in response to an incident are appropriate to the circumstances and that actions taken in changing circumstances are effective in dealing with the incident. For instance the options available to incident response teams may be limited and include the need to follow specific procedures or sequences of events. In such a situation the organisation may need clearly defined procedures to ensure that all levels of incident response are aware of how the incident is to be confronted. Key aspects of this competency include: • forming clear and unambiguous views about the nature of the potential incident • evaluating and prioritising alternative tactics • analysing and interpreting information for trends and impacts • forwarding key information to those who require it The person may: • undertake critical analysis and problem solving • examine specific scenarios and develop tactics to physically contain those events • evaluate alternative tactics • recommend the most appropriate strategy • document strategies Generally the person would be an incident coordinator, manager or technical specialist and be part of an incident response team during the incident. They may have an ongoing role for managing incident information and/or the incident information system.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify incident containment tactics	1.1. Identify risk characteristics of the possible incident scenarios 1.2. Identify specific objectives of incident containment 1.3. Identify existing tactics 1.4. Develop a range of alternative tactics
2. Evaluate tactics	2.1. Predict incident behaviour and growth under alternative strategy scenarios 2.2. Consider issues relating to health, safety and environment 2.3. Identify and secure resource requirements for alternative tactics 2.4. Identify the impact of tactics on a range of factors 2.5. Identify and clearly document tactics 2.6. Obtain, collate and record feedback on tactics from stakeholders and incident managers and ensure this is reflected into the documentation according to procedures 2.7. Negotiate stakeholder needs and address
3. Select tactics	3.1. Document findings and feedback on the suitability of different tactics 3.2. Recommend preferred tactics according to procedures 3.3. Document tactics and build into strategies and training doctrines
4. Adopt strategies	4.1. Incorporate documentation on selected tactics into the appropriate incident management manuals 4.2. Notify stakeholders of new tactics 4.3. Incorporate selected tactics into incident training exercises

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
Competence includes the ability to isolate the causes of problems within the incident response system and to be able to distinguish between causes of problems indicated by: • tactics fail to achieve the desired outcomes • input to tactic development is limited or of less value than expected • tactics when exercised show gaps or limitations in effectiveness • adoption of tactics proves problematic or resistance is encountered • incident containment proves to be of limited success.
Required knowledge
The knowledge referred to in the Evidence Guide for this unit includes: • different types of incidents and risks • incident prediction • equipment required • rescue techniques • intervention and control techniques for heating, fires and explosions • incident resources and how to access them • incident response and disaster planning processes and techniques • relevant legislation • hazard identification and control • risk management principles and techniques • structure, roles, capabilities and operational limitations of external resources and agencies • insurance policies and considerations • economic impact and considerations.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment for this unit of competency will be by way of simulation or observation under incident conditions. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations which can include a variety of incident circumstances. Simulations must, as closely as possible, approximate actual incident conditions and should be based on the actual facility. Assessments should include walk-throughs of the relevant competency components and may include the use of case studies/scenarios and role plays. This unit of competency requires a significant body of knowledge which will be assessed through questioning and the use of 'what-if' scenarios both in the facility (during demonstration of normal operations and walk-throughs of abnormal operations) and off the site.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate responsive action. The emphasis should be on the ability to deal effectively with the incident or to contribute effectively to the recovery from the incident. Consistent performance should be demonstrated. In particular look to see that: • understanding of incident containment tactics is demonstrated • understanding of the regulatory environment in which actions need to take place is explained • the impact of the incident on environment, local community and economy of the organisation is understood • tactics are evaluated with consideration given to advantages and disadvantages • hazard risk identification and control is demonstrated • information gathering, analysis and communication are demonstrated to the required level • relevant personnel and experts/specialists with whom consultation must take place are identified These assessment activities should include a range of problems,

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EVIDENCE GUIDE	
	including new, unusual and improbable situations which may have been generated from past workplace incident history, incidents in similar workplaces around the world, hazard analysis activities and/or similar sources.
Context of and specific resources for assessment	Assessment will require (1) access to an accurately simulated environment or (2) a suitable method of gathering evidence of responding ability over a range of situations. A bank of scenarios/case studies/what-ifs and a bank of questions to probe the reasoning behind the observable actions will likewise be required.
Method of assessment	It may be appropriate to assess this unit concurrently with other relevant units.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	Incidents may include: • fire • explosion • gas or oil leak • accident • bomb threat • missing personnel • combination of the above Tactics are identified through: • consultation with experts • literature review Stakeholders may include: • shareholders • board of directors • employees • unions • contractors • suppliers • insurance companies • local community • fire brigade • police • local emergency management organisations • medical services • relevant public authority
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria

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RANGE STATEMENT	
	and HSE requirements, the HSE requirements take precedence.
Relationship to Major Hazard Facility Legislation	Organisations within the Chemical, Hydrocarbons and Oil Refining industries may find themselves falling under the provisions of various Major Hazard Facilities legislation. In developing this unit consideration has been given to the requirements of Sections 8 and 9 of the National Standard for the Control of Major Hazard Facilities [NOHSC:1014(2002)] and the National Code of Practice for the Control of Major Hazard Facilities [NOHSC:2016(1996)]. This unit will assist individuals to meet some of their obligations under the relevant State or Territory legislation. Responsibility for appropriate contextualisation and application of the unit to ensure compliance, however, remains with the individual organisation.

Unit Sector(s)

Unit sector	Support/generic

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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PMAOPS202B Operate fluid mixing equipment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This competency covers the operation of the range of fluid mixers found in fluid processing plants. This competency is typically performed by all operators using mixing equipment.

Application of the Unit

Application of the unit	In a typical scenario an operator uses a baffled mixing tank (or other mixer) to make a product to specification. This covers the loading of liquid and perhaps solid materials into the mixing equipment. In this example the operator monitors the mixing to ensure the components are dispersed appropriately and checks the resulting product to ensure it complies. This unit does not cover mixing which is part of the preparation of materials (see *PMAOPS105C Select and prepare materials*) nor the incidental mixing which occurs in a reaction vessel (see *PMAOPS220B Monitor chemical reactions in the process* or *PMAOPS302B Operate reactors and reactor systems*) or in-line mixers (see *PMAOPS201B Operate fluid flow equipment*).3 The operator would: • identify and report operational problems • be aware of and contribute to a safe working environment • contribute to the safe and productive operation of the equipment • operate, monitor and maintain equipment using relevant procedures. Generally the operator would be part of a team during start up and shut down procedures and would be expected to be capable of demonstrating competence in all parts of this unit. At all times they would be liaising and cooperating with other members of the team.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Identify work requirements 1.2. Identify and control hazards 1.3. Coordinate with appropriate personnel
2. Prepare mixing equipment.	2.1. Identify type of fluid mixer 2.2. Identify appropriate applications for the mixer type 2.3. Check materials.
3. Operate fluid mixing equipment.	3.1. Charge materials 3.2. Start up/shut down fluid mixing equipment as required 3.3. Adjust mixing conditions as required 3.4. Check product 3.5. Adjust product as instructed or to procedure 3.6. Discharge product 3.7. Complete routine checks and reports, taking action on unexpected readings and trends.
4. Isolate and de-isolate plant.	4.1. Isolate plant 4.2. Make safe for required work 4.3. Check plant is ready to be returned to service 4.4. Prepare plant for return to service.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
• efficient and effective operation of plant/equipment • hazard analysis • completing plant records • communication • problem solving.
Required knowledge
Understanding of fluid mixing equipment and its integral equipment to a level needed to recognise and resolve operational problems. In particular it includes a knowledge of: • all items on a schematic of the mixing system and the function of each • fluid mixing principles, such as shear, viscosity and concepts of uniformity • principles of operation of fluid mixing equipment • physics of operation • correct methods of starting, stopping, operating and controlling mixing equipment • typical mixing problems, and their causes and remedy, within operator's scope of skill level and responsibility • duty of care • materials safety data sheets (MSDSs) • HAZCHEM symbols and codes • hazardous substances regulations • spill containment and disposal procedures • procedures related to this competency • environmental requirements related to waste disposal • workplace hazards and methods of controlling hazards. • hierarchy of control • communication protocols, eg radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • corrective action appropriate to the problem cause • function and troubleshooting of major components and their problems (such as impellors, seals or bearings) • types and causes of mixing problems within operator's scope of skill level and responsibility.

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Evidence Guide

EVIDENCE GUIDE	
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Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios and role plays. This unit of competency requires a significant body of knowledge which will be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant areas are recognised and an appropriate contribution made to their solution. These aspects may be best assessed using a range of scenarios/case studies/what-ifs as the stimulus with a walk-through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations which may have been generated from the past incident history of the plant, incidents on similar plants around the world,

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EVIDENCE GUIDE	
	hazard analysis activities and similar sources.
Context of and specific resources for assessment	Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. Consider co-assessment with units about: • measurements • housekeeping • communication. In a major hazard facility, it may be appropriate to assess this unit concurrently with: • *MSAPMOHS200A Work safely*.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the communication ability, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	Fluid mixing processes can vary from continuous mixing processes as typically found in oil plants to batch mixing as commonly used in chemical plants and paint manufacture. It covers the mixing of two or more materials to make a product.
Equipment	This competency includes items of equipment such as: • mixers for low, medium and high viscosity fluids • jet mixing • top and side entry mixers • propeller, and pitched and square bladed turbine impellers.
Problems	Typical problems include incorrect: • mixing time • power consumption • uniformity • vortexing • aeration.
Remedial actions	Remedial actions include changing: • position and angle of baffles where appropriate • impellor (angle, size, shape or speed) • feed rate of fluids.
Mixing conditions	Mixing conditions may be adjusted by: • baffles • mixer speed • mixing duration • other means
Start up shut down as required	Start up shut down as required includes: • start up and shut down to/from normal operating conditions • start up and shut down to/from isolated, cold, empty

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RANGE STATEMENT	
	• all other conditions experienced on the plant. ie from any condition to any condition experienced on the plant.
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person.
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit sector	Operational/technical

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Competency field

Competency field	

Co-requisite units

Co-requisite units		

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PMAOPS205B Operate heat exchangers

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This competency is typically performed by an operator and covers the operation of heat exchangers, including heat exchangers that form part of a heating, cooling or refrigeration system, and solving of heat exchanger problems.

Application of the Unit

Application of the unit	In this competency, an operator would typically start up and shut down heat exchangers in accordance with procedures, and make adjustments to flow rate, temperature and pressure, depending on the type of heat exchanger. Generally the operator would be part of a team during start up and shut down procedures and would be expected to be capable of demonstrating competence in all parts of this unit. At all times they would be liaising and cooperating with other members of the team. This competency does not cover super heaters or waste heat boilers, which are treated as part of steam generating equipment.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Identify work requirements 1.2. Identify and control hazards 1.3. Coordinate with appropriate personnel
2. Operate heat exchangers.	2.1. Identify the type of heat exchanger 2.2. Start up and shut down heat exchanger according to the heat exchanger type and duty 2.3. Adjust flow rates, temperatures and pressure as appropriate to type of heat exchanger 2.4. Complete routine checks, logs and paperwork, taking action on unexpected readings and trends.
3. Isolate and de-isolate plant.	3.1. Isolate plant 3.2. Make safe for required work 3.3. Check plant is ready to be returned to service 3.4. Prepare plant for return to service.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
• efficient and effective operation of plant/equipment • hazard analysis • completing plant records • communication • problem solving. Operation of heat exchanger and the ability to recognise and resolve operational problems. This could include any of the following remedial actions: • making adjustments • carrying out minor maintenance • identifying and reporting problems outside operator's scope of responsibility • identifying and controlling hazards related to heat exchangers and their integral equipment, including pressure vessels.
Required knowledge
Comprehensive understanding of heat exchanger principles to a level needed to control the operation. In particular, the operator needs to understand the factors affecting efficient operation of a heat exchanger in order to make appropriate adjustments or recognise when maintenance is required. These also includes a knowledge of: • all items on a schematic of the heat exchanger system and the function of each • principles of operation of heat exchangers • correct methods of starting, operating and shutting down heat exchangers • issues related to pressure vessels (regulations, requirements) • physics and chemistry relevant to the process unit • process parameters and limits, eg temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, eg radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • causes of head loss and change in heat transfer coefficient/rates • corrective action appropriate to the problem cause • function and troubleshooting of major internal components and their problems, such as tubes and baffles.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios and role plays. This unit of competency requires a significant body of knowledge which will be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant areas are recognised and an appropriate contribution made to their solution. These aspects may be best assessed using a range of scenarios/case studies/what-ifs as the stimulus with a walk-through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations which may have been generated from the past incident history of the plant, incidents on similar plants around the world,

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EVIDENCE GUIDE	
	hazard analysis activities and similar sources.
Context of and specific resources for assessment	Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. For many plants, it might be appropriate for this unit to be assessed with units covering: • fluid flow • utilities and services • communication. In a major hazard facility, it may be appropriate to assess this unit concurrently with: • *MSAPMOHS200A Work safely*.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This competency includes all types of heat exchangers such as: • plate • Utube • spiral • bayonet • air cooled fin • shell and tube (all variants of design) • scraped surface • vessel jackets/coils. This competency does not cover super heaters or waste heat boilers, as these are treated as part of steam generating equipment.
Heat exchanger duties	Heat exchanger duties include: • heating • cooling • cryogenic • reboilers • condensers • gas dryers • gas coolers • refrigeration (evaporators/condensers).
Problems	Typical problems include: • damage to heat exchanger due to overheating and/or under/over pressurising • factors that affect heat exchanger efficiency (scale build-up, fouling, internal leakage, air lock, turbulence, corrosion) • leakage or gasket problems • recognising when maintenance is required.

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RANGE STATEMENT	
Start up shut down as required	Start up shut down as required includes: • start up and shut down to/from normal operating conditions • start up and shut down to/from isolated, cold, empty • all other conditions experienced on the plant. ie from any condition to any condition experienced on the plant.
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person.
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit sector	Operational/technical

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Competency field

Competency field	

Co-requisite units

Co-requisite units		

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PMAOPS206B Operate separation equipment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This competency is typically performed by all operators and covers the operation of typical stand alone dual phase separation equipment as used in a chemical or oil/hydrocarbons processing plant, and solving of problems with separation processes.

Application of the Unit

Application of the unit	In this competency an operator would typically start up and shut down separation operations in accordance with procedures, and make adjustments to flow rate and pressure, depending on the type of separation equipment. Generally the operator would be part of a team during start-up and shutdown procedures and would be expected to demonstrate competence in all parts of this unit. At all times the operator would be liaising and cooperating with other members of the team. This unit does not cover powered separation equipment, eg centrifuge or chemical separation equipment, which are instead covered by: • *PMAOPS207B Operate powered separation equipment* • *PMAOPS208B Operate chemical separation equipment*

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Identify work requirements 1.2. Identify and control hazards 1.3. Coordinate with appropriate personnel
2. Operate separation equipment.	2.1. Identify the type of separation equipment 2.2. Start up and shut down separation equipment according to the separation equipment type and duty 2.3. Monitor plant frequently and critically throughout shift using measured/indicated data and senses (sight, hearing etc) as appropriate 2.4. Adjust flow and pressure as appropriate to type of separation equipment 2.5. Complete routine checks, logs and paperwork, taking action on unexpected readings and trends.
3. Isolate and de-isolate plant.	3.1. Isolate plant 3.2. Make safe for required work 3.3. Check plant is ready to be returned to service 3.4. Prepare plant for return to service.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
• efficient and effective operation of plant/equipment • hazard analysis • completing plant records • communication • problem solving.
Required knowledge
• Comprehensive understanding of separation equipment principles and typical problems to a level needed to control the operation. In particular it includes a knowledge of: • principles of operation of plant/equipment • physics and chemistry relevant to the process unit • process parameters and limits, eg temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, eg radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • all items on a schematic of the plant item and the function of each • correct methods of starting, stopping, operating and controlling separator • corrective action appropriate to the problem cause • types and causes of separation problems within operator's scope of skill level and responsibility. • behaviour of solids, liquids and gases • function and troubleshooting of major internal components and their problems, such as cartridges, baskets, supports, nozzles, grids.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios and role plays. This unit of competency requires a significant body of knowledge which will be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant areas are recognised and an appropriate contribution made to their solution. These aspects may be best assessed using a range of scenarios/case studies/what-ifs as the stimulus with a walk-through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations which may have been generated from the past incident history of the plant, incidents on similar plants around the world, hazard analysis activities and similar sources.
Context of and specific	Assessment will require access to an operating plant over an extended

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EVIDENCE GUIDE	
resources for assessment	period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. For many plants, it might be appropriate for this unit to be assessed with units covering: • fluid flow • communication. In a major hazard facility, it may be appropriate to assess this unit concurrently with: • *MSAPMOHS200A Work safely*.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This competency includes all types of stand alone separation equipment for gaseous, liquid and solids separation where the separation process is physical and the separator is not powered or motor driven. Separation equipment covered by this competency includes: • cyclones • hydrocyclones • scrubbers • knockout drums • demisters/drift eliminators • filters (cartridge, basket, sand etc).
Problems	Typical problems include: • seal/gasket leaks • pressure loss/low flow • cartridge/filter change • blockages/build-up/fouling • erosion/wear.
Start up shut down as required	Start up shut down as required includes: • start up and shut down to/from normal operating conditions • start up and shut down to/from isolated, cold, empty • all other conditions experienced on the plant. ie from any condition to any condition experienced on the plant.
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person.

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RANGE STATEMENT	
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit sector	Operational/technical

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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PMAOPS207B Operate powered separation equipment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This competency covers the operation of powered dual phase separation equipment including centrifuges, scraped filters, rotary vacuum filters and the like. This type of equipment is found in many process manufacturing plants. It also includes solving problems with separation processes and the equipment, including the driver powering the separation equipment (eg electric motor).

Application of the Unit

Application of the unit	This competency is typically performed by all operators. The operator would typically start up and shut down separation equipment to procedures, and make adjustments to flow rate and pressure, depending on the type of separation equipment. Generally the operator would be part of a team during start up and shut down procedures and would be expected to be capable of demonstrating competence in all parts of this unit. At all times they would be liaising and cooperating with other members of the team This unit does not cover stand alone, non-powered dual phase separation equipment or chemical separation equipment, which are covered by the following competencies: • *PMAOPS206B Operate separation equipment* • *PMAOPS208B Operate chemical separation equipment*

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Identify work requirements 1.2. Identify and control hazards 1.3. Coordinate with appropriate personnel
2. Operate powered separation equipment.	2.1. Identify the type of powered separation equipment 2.2. Start up and shut down separation equipment according to the separation equipment type and duty 2.3. Monitor plant frequently and critically throughout shift using measured/indicated data and senses (sight, hearing etc) as appropriate 2.4. Adjust flow and pressure as appropriate to type of separation equipment 2.5. Complete routine checks, logs and paperwork, taking action on unexpected readings and trends.
3. Operate drivers of separation equipment.	3.1. Monitor critical variables such as amps, temperature, vibration 3.2. Keep critical variables in range 3.3. Recognise trends/patterns which indicate a potential or actual problem with the driver 3.4. Take appropriate action to ensure driver is returned to full performance in a timely manner.
4. Isolate and de-isolate plant.	4.1. Isolate plant 4.2. Make safe for required work 4.3. Check plant is ready to be returned to service 4.4. Prepare plant for return to service.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
• efficient and effective operation of plant/equipment • hazard analysis • completing plant records • communication • problem solving.
Required knowledge
A comprehensive understanding of separation equipment principles and typical problems to a level needed to control the operation, and recognise and resolve operational problems. In particular it includes a knowledge of: • principles of operation of plant/equipment • physics and chemistry relevant to the process unit, including kinetic energy effects • process parameters and limits, eg temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, eg radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • correct methods of starting, stopping, operating and controlling flow • causes of head loss in piping systems, including comparison of fittings using Le/d concept, fluid and pipe material properties, flow geometry etc • corrective action appropriate to the problem cause • types and causes of separator problems within operator's scope of skill level and responsibility. • factors affecting efficient operation of the separation equipment • behaviour of solids, liquids and gases • function and troubleshooting of major internal components and their problems, such as internals, supports, nozzles, grids or scrapers • typical problems with separation equipment and their remedy • typical problems with drivers of separation equipment and their remedy.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios and role plays. This unit of competency requires a significant body of knowledge which will be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant areas are recognised and an appropriate contribution made to their solution. These aspects may be best assessed using a range of scenarios/case studies/what-ifs as the stimulus with a walk-through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations which may have been generated from the past incident history of the plant, incidents on similar plants around the world,

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EVIDENCE GUIDE	
	hazard analysis activities and similar sources.
Context of and specific resources for assessment	Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. For many plants, it might be appropriate for this unit to be assessed with units covering: • fluid flow • communication. In a major hazard facility, it may be appropriate to assess this unit concurrently with: • *MSAPMOHS200A Work safely*.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Equipment	Separation equipment covered by this competency includes all types of powered separation equipment for gaseous, liquid and solids separation duties, such as: • centrifuges • rotary dryers • rotary vacuum filters.
Problems	This competency covers electric motor drivers; however, other types of drivers may be included. Typical problems include: • seal/gasket leaks • pressure loss/low flow • blockages/build-up • erosion/wear • separator driver problems.
Variables	The operator is required to monitor critical variables such as amps, temperature and vibration as well monitoring the output from the separation equipment.
Remedial actions	Remedial actions could include: • making adjustments to the equipment (flow, pressure, etc) • carrying out minor maintenance within operator's skill level • identifying and reporting problems outside operator's scope of ability • identifying and controlling hazards related to powered separation equipment and surrounding areas.
Start up shut down as required	Start up shut down as required includes: • start up and shut down to/from normal operating conditions • start up and shut down to/from isolated, cold, empty • all other conditions experienced on the plant.

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RANGE STATEMENT	
	ie from any condition to any condition experienced on the plant.
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person.
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit sector	Operational/technical

Competency field

Competency field	

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Co-requisite units

Co-requisite units		

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PMAOPS208B Operate chemical separation equipment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This competency covers the operation of chemical separation equipment where the feed is essentially in a single phase. It covers the range of separation equipment which rely on a phase change or chemical process to enact the separation, including crystallisers, ion-exchange filters, absorbers and the like. It also includes solving problems with separation processes and the equipment.

Application of the Unit

Application of the unit	In this competency, an operator would typically start up and shut down separation operations in accordance with procedures, and make adjustments to flow rate and pressure, depending on the type of separation equipment. Generally the operator would be part of a team during start up and shut down procedures and would be expected to be capable of demonstrating competence in all parts of this unit. At all times they would be liaising and cooperating with other members of the team. This unit does not cover stand alone, non-powered dual phase separation equipment or powered dual phase separation equipment (eg centrifuge) which are instead covered by: • *PMAOPS206B Operate separation equipment* • *PMAOPS207B Operate powered separation equipment*.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Identify work requirements 1.2. Identify and control hazards 1.3. Coordinate with appropriate personnel
2. Operate chemical separation equipment.	2.1. Identify the type of chemical separation equipment 2.2. Start up and shut down chemical separation equipment according to type and duty 2.3. Monitor plant frequently and critically throughout shift using measured/indicated data and senses (sight, hearing, etc) as appropriate 2.4. Adjust flow and pressure as appropriate to type of separation equipment 2.5. Complete routine checks, logs and paperwork, taking action on unexpected readings and trends.
3. Isolate and de-isolate plant.	3.1. Isolate plant 3.2. Make safe for required work 3.3. Check plant is ready to be returned to service 3.4. Prepare plant for return to service.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
• efficient and effective operation of plant/equipment • hazard analysis • completing plant records • communication • problem solving.
Required knowledge
A comprehensive understanding of separation equipment principles and typical problems to a level needed to control the operation, and recognise and resolve operational problems. In particular it includes a knowledge of: • all items on a schematic of the separator system and the function/s of each • principles of operation of separation equipment • factors affecting efficient operation of the separation equipment • physics of operation, including behaviour of solids, liquids and gases, effects of phase changes, effects of temperature and pressure • chemistry of operation, including simple chemical reactions, elements, compounds and mixtures • function and troubleshooting of major internal components and their problems, such as reagents, contaminants, supports, nozzles, grids etc • typical problems with separation equipment and their remedy. • process parameters and limits, eg temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, eg radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • correct methods of starting, stopping, operating and controlling • corrective action appropriate to the problem cause • types and causes of problems within operator's scope of skill level and responsibility.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios and role plays. This unit of competency requires a significant body of knowledge which will be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant areas are recognised and an appropriate contribution made to their solution. These aspects may be best assessed using a range of scenarios/case studies/what-ifs as the stimulus with a walk-through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations which may have been generated from the past incident history of the plant, incidents on similar plants around the world,

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EVIDENCE GUIDE	
	hazard analysis activities and similar sources.
Context of and specific resources for assessment	Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. For many plants, it might be appropriate for this unit to be assessed with: • *PMAOPS201B Operate fluid flow equipment* • *MSAPMSUP210A Process and record information*. In a major hazard facility, it may be appropriate to assess this unit concurrently with: • MSAPMOHS200A Work safely.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Equipment	Separation equipment covered by this competency includes all types of chemical separation equipment for gaseous, liquid and solids separation duties, where the feed is essentially in a single phase and the separation relies on a change of the material or a chemical process to enact the separation, such as: • crystallisers • ion-exchange filters/columns • precipitators • absorbers/adsorbers.
Remedial Actions	Remedial actions could include: • making adjustments (flow, pressure etc) • carrying out minor maintenance within operator's skill level • identifying and reporting problems outside operator's scope of ability • identifying and controlling hazards related to chemical separation equipment and surrounding areas.
Problems	Typical problems include: • seal/gasket leaks • pressure loss/low flow • cartridge/filter change • reagent/medium activity • blockages/build-up • contaminants.
Start up shut down as required	Start up shut down as required includes: • start up and shut down to/from normal operating conditions • start up and shut down to/from isolated, cold, empty • all other conditions experienced on the plant. ie from any condition to any condition experienced on the plant.

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RANGE STATEMENT	
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person.
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit sector	Operational/technical

Competency field

Competency field	

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Co-requisite units

Co-requisite units		

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PMAOPS223B Operate and monitor valve systems

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	In a typical scenario an operator adjusts and monitors valves and ancillary equipment as part of controlling a process, eg hydrocarbons transport pipeline, gas distribution network.

Application of the Unit

Application of the unit	This unit may be required when *PMAOPS222B Operate and monitor pumping systems and equipment* is appropriate. It may only be counted towards a qualification where competence in *PMAOPS201B Operate fluid flow equipment* is unable to be obtained due to the nature of the job, but the operation of valves is relevant. The operations technician would: • identify and report operational problems • be aware of and contribute to a safe working environment • contribute to the safe and productive operation of the valve • operate, monitor and maintain equipment using relevant procedures Generally the operator would be part of a team and would be expected to be competent in all parts of this unit. At all times they would be liaising and cooperating with other members of the team/shift.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Identify work requirements 1.2. Identify and control hazards 1.3. Coordinate with appropriate personnel
2. Prepare valves for operation.	2.1. Check operation of valves and valve systems by applying knowledge of valve operation and fundamental operating principles 2.2. Check the valves required for operation against the site specific operating pressures, temperatures, volume, velocities and materials requirements where applicable 2.3. Prepare or sequence valves required for operation, ensuring that they are either closed or opened as required, to regulate the flow of liquids and systems flow rates in a safe and efficient manner 2.4. Check the valve operational integrity to minimise the risk of valve leakages and failures.
3. Operate valve systems.	3.1. Monitor valve operation to ensure it is functioning correctly and excludes such incidents as vibration, chatter, cycling, and sticking 3.2. Take appropriate action 3.3. Regulate or alter valve sequences to control the flow rates of fluid during the process to meet changing production conditions and demands.
4. Conduct operational maintenance	4.1. Clean and lubricate valve stems, threads and other operational parts to ensure the correct operational condition of the valve is maintained 4.2. Evenly tighten valve bolting assembles to prevent product leakage 4.3. Identify valve and regulator faults and take appropriate action 4.4. Isolate jammed or sticking valves from operation, and take appropriate action.
5. Isolate and de-isolate valves.	5.1. Isolate plant 5.2. Make safe for required work 5.3. Check plant is ready to be returned to service 5.4. Prepare plant for return to service.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
Competence includes the ability to isolate the causes of problems to an item of equipment within the valve system and distinguish between causes of problems/alarm/fault indications such as: • instrument failure/malfunction • electrical failure/malfunction • mechanical failure/malfunction • equipment design deficiencies, eg wrong valve type for service • product parameters, eg temperature, viscosity, purity • fouling or contamination • erosion and corrosion.
Required knowledge
The knowledge referred to in the Evidence Guide for this unit includes: • identify all items on a schematic of the valve system and describe the function of each • physics related to the process • valve equipment operating parameters • process and product variables and reactions • operating pressures • operating temperatures • flow volume calculations • flow velocity calculations • fluid corrosive properties • fluid erosive properties. • principles of operation of valves • physics and chemistry relevant to the valves and the materials processed • process parameters and limits, eg temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, eg radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • correct methods of, operating and controlling valves • corrective action appropriate to the problem cause • function and troubleshooting of major components and their problems

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REQUIRED SKILLS AND KNOWLEDGE
• types and causes of problems within operator's scope of skill level and responsibility.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios, role plays and 3D virtual reality interactive systems. In the case of evacuation training or of training for competencies practised in life threatening situations, simulation may be used for the bulk of the training. This unit of competency requires an application of the knowledge contained in the use of valve systems and their integral equipment, to the level needed to maintain control and recognise and resolve problems. This can be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant areas are recognised and an appropriate contribution made to their solution. These aspects may be best assessed using a range of

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EVIDENCE GUIDE	
	scenarios/case studies/what-ifs as the stimulus with a walk-through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations, which may have been generated from the past incident history of valves, incidents with similar valves around the world, hazard analysis activities and similar sources.
Context of and specific resources for assessment	As a general rule assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating competence over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. It will frequently also be appropriate to assess this unit concurrently with: • *PMAOPS221B Operate and monitor pumping systems and equipment*
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This unit of competency includes all such items of equipment and unit operations which form part of the valve system. For your plant this may include (select relevant items): • globe, butterfly, ball and gate valves • control valves • isolation valves • non-return or check valves • pressure relief valves • shutdown systems • hydraulic power units. Valve actuation may be: • pneumatic • hydraulic • electrical • manual.
Typical problems	Typical problems for your plant may include: • vibration/resonance • blockages/hydrates • valve seat wear • valve seal leakage • valve stem leakage • mechanical failure, eg plug/gate • valve sticking.
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility

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RANGE STATEMENT	
	• following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person.
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Health, **safety and environment** (**HSE**)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit sector	Operational/technical

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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PMAOPS230B Monitor, operate and maintain pipeline stations and equipment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	In a typical scenario, an operator is responsible for the operation and monitoring of pipeline stations and associated equipment within the parameters established. The competence includes examining the station and its equipment for signs of damage and/or need of maintenance, maintaining general cleanliness and reporting against specific requirements. Pipeline stations can include: • maintenance bases • compressor stations • scraper stations • inlet and delivery stations • mainline block valve sites.

Application of the Unit

Application of the unit	The operator would: • identify and rectify operational problems • monitor station operating parameters • maintain station equipment. Generally the operator would work on an individual basis and be expected to be capable of performing all parts of this unit, but may be part of a team. At all times they would be liaising and cooperating with other members of the team. This unit does not require the operation of a central control panel, however, it can be applied to a pipeline control centre if applicable. AS 2885 Part 3 forms the principle reference standard for this competency.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Identify work requirements 1.2. Identify and control hazards 1.3. Coordinate with appropriate personnel
2. Plan and organise for activities.	2.1. Review previous reports and check for outstanding work orders or notices 2.2. Obtain tools, equipment and testing devices needed to carry out the work and check for correct operation and safety 2.3. Check operational area to ensure that hazards are controlled 2.4. Conduct required safety checks and pre-start checks of the equipment 2.5. Determine status of the system through communication with relevant personnel prior to commencing start-up.
3. Start up/shut down the system.	3.1. Start up the system in accordance with procedures 3.2. Shutdown in accordance with procedures and conditions 3.3. Apply emergency shutdown procedures when appropriate 3.4. Maintain records/reports to procedures.
4. Monitor the system	4.1. Monitor operating conditions of equipment through condition monitoring systems, gauge levels, temperatures and flow indicators in order to determine performance of equipment and system 4.2. Adjust systems for the most efficient operation 4.3. Identify equipment faults through inspection and testing of the operational equipment 4.4. Take appropriate action 4.5. Communicate pipeline system information to relevant personnel 4.6. Select and apply emergency response when required
5. Isolate and de-isolate plant.	5.1. Isolate plant 5.2. Make safe for required work 5.3. Check plant is ready to be returned to service 5.4. Prepare plant for return to service.
6. Record and report results.	6.1. Document and record maintenance results to procedures 6.2. Notify work completion to procedures 6.3. Cancel where appropriate permit to work and sign off at completion of repair.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
Competence includes the ability to isolate the causes of problems to an item of equipment within the pipeline system and to distinguish between causes of problems/alarm/fault indications such as: • process gas variations • instrument failure/wrong reading • electrical failure • mechanical failure • operational problems.
Required knowledge
The knowledge referred to in the Evidence Guide for this unit includes: • station instrumentation • condition monitoring equipment • station power supplies • operations of metering equipment • functions of process control equipment • principles behind gas analysis equipment • purpose of valves, actuators and flanges • layout of piping systems • sumps and drains • station pressure vessels/filtration equipment • principles of operation of plant/equipment • physics and chemistry relevant to the process unit and the materials processed • process parameters and limits, eg temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, eg radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • all items on a schematic of the plant item and the function of each • correct methods of starting, stopping, operating and controlling process • corrective action appropriate to the problem cause • function and troubleshooting of major components and their problems • types and causes of problems within operator's scope of skill level and responsibility.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant/pipeline and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios, role plays and 3D virtual reality interactive systems. In the case of evacuation training or training for competencies practised in life-threatening situations, simulation may be used for the bulk of the training. This unit of competency requires an application of the knowledge contained in the use of the pipeline and its integral equipment, to the level needed to maintain control and recognise and resolve problems. This can be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant areas are recognised and an appropriate contribution made to their solution. These aspects may be best assessed using a range of

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EVIDENCE GUIDE	
	scenarios/case studies/what-ifs as the stimulus with a walk-through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations which may have been generated from the past incident history of the plant, incidents on similar plants around the world, hazard analysis activities and similar sources.
Context of and specific resources for assessment	As a general rule assessment will require access to an operating pipeline system over an extended period of time, or a suitable method of gathering evidence of operating competence over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. Consider co-assessment with: • *PMASUP236B Operate vehicles in the field* • *PMAOPS221B Operate and monitor prime movers* • *PMAOPS304B Operate and monitor compressors* • *PMAOPS223B Operate and monitor valve systems*.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
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Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This unit of competency includes all items of equipment and unit operations which form part of the pipeline system. For your plant this may include (select relevant items): • compressor systems and equipment, including monitoring systems, anti surge systems, safety systems and compressor control systems • prime movers, including turbine engines, reciprocating engines and electric motors, • instrument and control systems • valve systems.
Typical problems	Typical problems for your plant may include: • gas/product leaks • incorrect valve positions • electrical problems • compressor or pump failure • out of current inspection status • gauge failure or hose rupture, leaks • instruments out of calibration • instruments and equipment requiring cleaning.
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person.
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions

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RANGE STATEMENT	
	• standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit sector	Operational/technical

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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PMAOPS307B Transfer bulk fluids into/out of storage facility

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	In a typical scenario involving land based tank farms or tankers at sea, the control room operator, from the main panel, will monitor and control the transfer of product into storage facilities including controlling product levels, flows, temperatures and pressures. The operations technician will also prepare and complete all necessary documentation for the control, transfer and calculation of product volumes.

Application of the Unit

Application of the unit	The storage facility or vessel will be monitored through the use of gas and fire detection equipment. Automatic sprinkler systems or deluges will be activated in the event of fire detection and emergency shutdown systems will operate. The equipment to be used in the transfer of product will be checked and tested before use. In some cases, before transferring, the circulation of product through pipelines, will commence. This is usually for the purpose of pipeline chilldown, and is required to minimise vapour pressure build-up in warm pipework. A comprehensive fire water supply main may encompass the facility and/or be located on the vessel, and a suitable fire pump would be able to provide fire water requirements in emergencies.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	PMAOPS201B	Operate fluid flow equipment

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Identify work requirements 1.2. Identify and control hazards 1.3. Coordinate with appropriate personnel
2. Prepare storage/transfer facilities	2.1. Manage products within the tank farm or at the platform in accordance with the site/enterprise's storage types, products and locations 2.2. Inspect storage or docking facilities for leaks or damage 2.3. Check and test safety systems to verify their operational condition and status, and report on all equipment faults 2.4. Conduct critical inspections of storage and tank farms (and ascertain seaworthiness of vessels at sea if required) ensuring areas are safe, clean and equipment can't be compromised by debris 2.5. Identify and report all equipment requiring maintenance, follow up to satisfactory conclusion.
3. Monitor storage facilities.	3.1. Confirm tank mixes, capacities and quality, and determine if these are being maintained within the agreed product requirements prior to transfer 3.2. Monitor gas detection/environmental/safety systems to ensure the storage area is a safe environment and that the safety of the area or vessel is not compromised 3.3. Communicate storage conditions to transfer or other personnel to inform them of the operational condition and status of the storage facilities or vessel.
4. Monitor load-out/transfer platform or facility as required.	4.1. Monitor load-out/transfer systems on the platform or in the terminal load-out/transfer area 4.2. Monitor gas detection/environmental/safety systems to ensure the load-out/transfer area is a safe environment 4.3. Inform appropriate personnel of the load-out/transfer area status, and conditions of the storage facilities.
5. Conduct load-out/transfer.	5.1. Communicate operational status to required personnel prior to loading 5.2. Ensure that all start-up permissives have been satisfied and product is ready for transfer 5.3. Set and adjust pump flow rates to keep within agreed capacities 5.4. Monitor loading pump performance to keep within stated operational ranges and vibration is in limits 5.5. Take and record product shipping/transfer samples as

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ELEMENT	PERFORMANCE CRITERIA
	required.
6. Isolate and de-isolate plant.	6.1. Isolate plant 6.2. Make safe for required work 6.3. Check plant is ready to be returned to service 6.4. Prepare plant for return to service.
7. Resolve problems	7.1. Identify possible problems in equipment and process. 7.2. Determine problems needing action 7.3. Determine possible fault causes 7.4. Rectify problem using appropriate solution within area of responsibility 7.5. Follow up items until resolved 7.6. Report problems outside area of responsibility to designated person.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
For the plant system/unit: • efficient and effective operation of plant/equipment • hazard analysis • completing plant records • communication • problem solving
Required knowledge
Demonstration of competence in this unit must include knowledge of the following: • principles of operation of plant/equipment • physics and chemistry relevant to the process unit • process parameters and limits, eg temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, eg radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • all items on a schematic of the plant item and the function of each • correct methods of starting, stopping, operating and controlling flow • causes of head loss in piping systems, including comparison of fittings using Le/d concept, fluid and pipe material properties, flow geometry etc • corrective action appropriate to the problem cause • function and troubleshooting of major internal components and their problems, such as impellors, seals or bearings • types and causes of problems within operator's scope of skill level and responsibility. • testing techniques • equipment isolation and purging • use and operation of safety equipment, including breathing apparatus • tank and product mixes • flow rates and measures • tank capacities and percentages • static electricity principles. Sound knowledge of storage and transfer techniques required to transport oil, gas or water is

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REQUIRED SKILLS AND KNOWLEDGE
expected.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant or platform and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios and role plays. This unit of competency requires a significant body of knowledge which will be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant areas are recognised and an appropriate contribution made to their solution. These aspects may be best assessed using a range of scenarios/case studies/what-ifs as the stimulus with a walk-through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations which may have been generated from the past incident history of the plant, incidents on similar plants around the world,

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EVIDENCE GUIDE	
	hazard analysis activities and similar sources.
Context of and specific resources for assessment	Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. In a major hazard facility, it may be appropriate to assess this unit concurrently with: • *MSAPMOHS200A Work safely*.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This unit of competency includes all items of equipment and unit operations which form part of the load-out and storage system. For your facility this may include (select relevant items): • tanks, such as concrete bunded storage tanks,atmospheric pressure tanks, floating roof tanks, temperature controlled tanks (heated, chilled, refrigerated) • vessels, eg pressure storage vessels • pumps, eg transfer and circulation pumps, stripping pumps • compressors, eg boil-off gas compressors • gauges • fire protection and deluge systems, eg flare system • gas detection systems and equipment • tank dipping and measurement equipment. • instrumentation.
Safety equipment	Safety equipment on site may include: • main fire pumps • jockey pumps • fire monitors • deluge systems • sub-surface foam injection • gas detection and reporting systems • fire detection and reporting systems • emergency shutdown systems
Products	Products may include hydrocarbons, oil, gas or bulk liquid chemicals/petrochemicals.
Problems	Typical problems for your facility may include: • insufficient/inappropriate storage for product/material • interruptions to loading through adverse weather conditions

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RANGE STATEMENT	
	• product surging • control of temperature and pressure • variations in feed • vibration • tank capacities and space.
Start up shut down as required	Start up shut down as required includes: • start up and shut down to/from normal operating conditions • start up and shut down to/from isolated, cold, empty • all other conditions experienced on the plant. ie from any condition to any condition experienced on the plant.
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person.
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Health, **safety and environment** (**HSE**)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

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Unit sector	Operational/technical

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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PMAOPS330B Communicate and monitor pipeline activities

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	In this scenario operations technicians maintain a watching brief over the pipeline from the pipeline control centre. The centre will be the hub for pipeline activities in order to achieve minimum risk to continued safe and efficient operation of the pipeline system. The pipeline control centre operations technician will communicate with field personnel to obtain information and direct field operators to check and maintain pipeline operations.

Application of the Unit

Application of the unit	The operations technician will: • ensure the safety of the system and check operational equipment prior to start up • maintain productivity through the monitoring of flows, pressures and temperatures in the field • maintain communication with product suppliers and user customers to maintain the safe and efficient operation of the pipeline. Generally the pipeline control centre operations technician would be part of a team during pipeline startup and shutdown procedures. However, they will be expected to be capable of performing all parts of this unit on their own. At all times they would be liaising and cooperating with other members of the team and customers. AS 2885 Part 3 forms the principle reference standard for this competency.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information about pipeline operation needs.	1.1. Respond to and record messages and information received from field operations and pipeline system stations 1.2. Interpret and acknowledge alarm codes correctly to ensure the correct response strategy is selected and applied to the situation 1.3. Clarify additional information needs and select an appropriate communication medium to deliver the information required 1.4. Improve operational efficiency through adequate and timely application of information provided 1.5. Interpret and action customer/shipper gas forecasts to ensure correct gas flow rates into the pipeline system are achieved.
2. Communicate pipeline information.	2.1. Monitor activities of pipeline personnel in the field and data from the control centre 2.2. Evaluate internal messages and response communications concerning system alarms/incidents to establish the scope and severity of the alarm/ incident 2.3. Convey pipeline system operation information to relevant personnel in other work areas to ensure safe and efficient operation of the pipeline system 2.4. Relay information to technicians and other services/parties so that fault finding or safety checks can be conducted to identify risks to product supply, pipeline equipment, environment and personnel 2.5. Authorise, record and monitor permits to work to allow operational activities to be undertaken or cancelled.
3. Coordinate pipeline systems operations.	3.1. Monitor field and pipeline station operations data 3.2. Monitor and observe equipment operating conditions, pressures and temperatures, and maintain correct equipment operating parameters 3.3. Identify faults and initiate the required repair or reporting of the fault 3.4. Isolate identified faults in the pipeline as appropriate 3.5. Respond to system alarms and emergencies 3.6. Determine the required course of action or emergency response to the identified system condition/ emergency 3.7. Complete and document pre-shutdown checks 3.8. Shut down the pipeline system under either normal or emergency conditions in accordance with operating

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ELEMENT	PERFORMANCE CRITERIA
	procedures 3.9. Confirm all identified maintenance is in compliance with the permit to work system and administer to ensure that all work complies with all issued permits.
4. Record and report.	4.1. Record and monitor field personnel movements to ensure the safety of all personnel in the field 4.2. Report safety and environmental risks or faulty equipment to designated personnel for further action or advice concerning the selection of the appropriate response or course of action 4.3. Interpret and maintain field inspection records and reports 4.4. Complete operations and production reports 4.5. Perform shift handover procedures.
5. Control hazards.	5.1. Identify hazards in work area 5.2. Assess the risks arising from those hazards 5.3. Implement measures to control those risks in line with procedures and duty of care.
6. Resolve problems.	6.1. Identify possible problems in equipment or process 6.2. Determine problems needing action 6.3. Determine possible fault causes 6.4. Rectify problem using appropriate solution within area of responsibility 6.5. Follow items initiated up until final resolution has occurred 6.6. Report problems outside area of responsibility to designated person.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
Competence includes the ability to isolate the causes of problems to an item of equipment within the compressor system and distinguish between causes of problems/alarm/fault indications such as: • pipeline pressure variations • instrument failure/wrong reading • electrical failure • mechanical failure • operational problems.
Required knowledge
The knowledge referred to in the Evidence Guide for this unit includes: • pipeline system functions within the design parameters and design philosophy • process information schemata of the pipeline system and associated facilities • pipeline operating principles, parameters and product specifications • relevant workplace documentation • SCADA systems • alarm systems and emergency systems, including fire and shutdown • the 'permit to work' system • architecture of the pipeline system • pipeline system operating parameters • gas quality/analysis equipment operation • MSDS information. • physics and chemistry relevant to the process unit and the materials processed • process parameters and limits, eg temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, eg radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • correct methods of starting, stopping, operating and controlling process • corrective action appropriate to the problem cause • function and troubleshooting of major components and their problems • types and causes of problems within operator's scope of skill level and responsibility.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant/ pipeline and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios, role plays and 3D virtual reality interactive systems. In the case of evacuation training or training for competencies practised in life-threatening situations, simulation may be used for the bulk of the training. This unit of competency requires an application of the knowledge contained in the use of the systems in the pipeline control centre and its integral equipment, to the level needed to maintain control and recognise and resolve problems. This can be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant areas are recognised and an appropriate contribution made to their solution. These aspects may be best assessed using a range of scenarios/case

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EVIDENCE GUIDE	
	studies/what-ifs as the stimulus with a walk through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations which may have been generated from the past incident history of the plant, incidents on similar plants around the world, hazard analysis activities and similar sources.
Context of and specific resources for assessment	Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. Consider co-assessment with: • *MSAPMPER202A Observe permit work* • *PMAOPS230B Monitor, operate and maintain pipeline stations and equipment*.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This unit of competency includes all such items of equipment and unit operations which form part of the pipeline control system. For your organisation this may include (select relevant items): • radio communications equipment, email, fax and telephones • heaters, furnaces and exchangers • station instrumentation/metering equipment • condition monitoring equipment • process control equipment • gas quality and analysis equipment • valves, actuators and flanges • piping systems • pressure vessels/filtration equipment • compressors and prime movers • cathodic protection systems.
Typical problems	Typical problems for your plant may include: • communications disruptions • corrosion/hydrate formation • variations in flow temperature and/or pressure • failures of piping, valves or flanges • pipeline leakages.
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person.
Procedures	Procedures may be written, verbal, computer-based or in some other

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RANGE STATEMENT	
	form. They include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Occupational Health and Safety (**OHS**)	The identification and control of hazards and the application of OHS is to be in accordance with current, applicable legislation and regulations and company procedures. All work is carried out at all times in accordance with these requirements

Unit Sector(s)

Unit sector	Operational/technical

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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PMAOPS335A Conduct pipeline pigging

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	In a typical scenario, an operations technician in/on a large plant/platform looks after the pig launching and receiving operations. The type of pigs used may include batching, cleaning, gauging, intelligent and foam pigs.

Application of the Unit

Application of the unit	Generally, the operations technician would be the key person in the team involved in the pigging operations and would be capable of performing all parts of this unit. At all times they would be liaising and cooperating with other members of the team. The operations technician would: • understand the risks associated with pigging and closure mechanisms • prepare the pipeline system for pig launching and rectify any operational problems • prepare the pipeline system for pig receival, and rectify any operational problems • interpret or assist in interpreting pigging data.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Identify work requirements 1.2. Identify and control hazards 1.3. Coordinate with appropriate personnel
2. Prepare the pipeline system for pigging (launching/receiving).	2.1. Liaise with the relevant people to ensure correct flow conditions are in the pipeline system prior to launching 2.2. Verify that all required permits have been issued 2.3. Prepare specified pig in accordance with requirements 2.4. Prepare pipeline for pigging operation in accordance procedures.
3. Launch, monitor progress and/or receive pig	3.1. Prepare launching and receiving scraper barrels and intermediate site for launching and receiving operations 3.2. Load the pig into the scraper barrel and launch 3.3. Calculate pig travel speed during the pig's progress 3.4. Monitor and track progress of the pig in the pipeline system 3.5. Take appropriate actions 3.6. Receive pig in accordance with legislative and enterprise procedural requirements
4. Interpret pigging data	4.1. Inspect the received pig to determine wear and/or other required information 4.2. Inspect, measure and or sample the waste material gathered during pigging operations as required 4.3. Take appropriate action 4.4. Dispose of waste materials to procedure 4.5. Record data accurately to assist with assessment of pipeline condition.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
Competence includes the ability to isolate the causes of problems to an item of equipment within the pigging system and to distinguish between causes of problems/alarm/fault indications such as: • instrument failure/wrong reading • electrical failure • mechanical failure • operational problem.
Required knowledge
The knowledge referred to in the Evidence Guide for this unit includes: • reasons for pipeline pigging and the type of pig used for each application • prevention/mitigation measures for closure risks • all items on a schematic of the pigging system and the function of each • the nature/condition of materials/flows entering and leaving the scraper barrels during the launching and receiving operations • correct valve sequences, • expected system pressures for launching/receiving operations • types of pigs and their purpose. • principles of pigging • physics and chemistry relevant to the pigs, pipes and materials • process parameters and limits, eg temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, eg radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • correct methods of starting, stopping, operating and controlling process • corrective action appropriate to the problem cause • function and troubleshooting of major components and their problems • types and causes of problems within operator's scope of skill level and responsibility.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual pig/pipe and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios, role plays and 3D virtual reality interactive systems. In the case of evacuation training or training for competencies practised in life threatening situations, simulation may be used for the bulk of the training. This unit of competency requires an application of the knowledge contained in the use of pigs and associated equipment, to the level needed to maintain control and recognise and resolve problems. This can be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant/platform areas are recognised and an appropriate contribution made to their solution.

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EVIDENCE GUIDE	
	These aspects may be best assessed using a range of scenarios/case studies/what-ifs as the stimulus with a walk through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations which may have been generated from past incident history of pigging operations, pigging incidents from similar plants/platforms around the world, hazard analysis activities and similar sources.
Context of and specific resources for assessment	Assessment will require access to pipeline pigging equipment over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. Consider co-assessment with other relevant units.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This unit of competency includes all such items of equipment and unit operations which form part of the pigging system. For your operation this may include: • batching pigs • cleaning pigs • foam pigs • gauging pigs • intelligent pigs.
Pigging problems	Typical pigging problems may include: • closure seal failure resulting in hydrocarbon release and possible explosion • closure fastening mechanism fails and results in door striking technician • stuck pig • delayed pig • scraper enclosure leaks • leaking valves • damaged pig.
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person.
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions

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RANGE STATEMENT	
	• standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit sector	Support/generic

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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PMAOPS411B Manage plant shutdown and restart

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit covers the co-ordination of the shutdown and restarting of a production process in a safe and efficient manner due to a planned or an unplanned shutdown or emergency situation. It does not apply to individual plant operators shutting down individual production units or following directions during a shutdown, as this is included in the normal unit of competency for operating that production unit.

Application of the Unit

Application of the unit	In a typical scenario, a complex and integrated plant (usually but not necessarily large and continuous) needs to be shut down for some reason. Shutting down is a complex process and is more than the simple turning off of a switch. This competency would typically be exercised by the leading plant technician on a shift. This unit requires the exercise of discretion as the plant technician's responses are governed by the cause of the shutdown and the plant's responses to that. They are required to adapt normal practice, within the overall guidelines, to the current situation to obtain the best outcome. This competency requires the coordination of all personnel involved in the shutdown to ensure it happens in as orderly a fashion as possible and that the plant is left in the best condition possible for a quick restart. The person exercising this competency needs to balance the varying requirements to ensure the shutdown occurs with maximum safety to personnel, plant, the environment and the business's productivity (in that order).

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Manage shutdown sequence.	1.1. Check and verify safety systems to ensure that the unit has been made safe 1.2. Identify the reason for, or cause of the shutdown by troubleshooting the system and by utilising all available data and information systems 1.3. Obtain confirmation of the identified shutdown from field based operators to verify both the nature and the reliability of the shutdown 1.4. Rectify or initiate procedures to rectify the fault or shutdown cause through either repair of the operational fault or readjustment before returning the system to start-up status.
2. Conduct start-up process.	2.1. Satisfy all start-up permissives prior to start- up process being commenced 2.2. Conduct start-up according to procedures and in a safe and efficient manner, ensuring a return to steady state operation is achieved.
3. Document shutdown and start-up process.	3.1. Complete all logs and workplace documentation relating to the shutdown/start-up process, ensuring all details, actions and responses are accurately recorded 3.2. Record any further ongoing production problems and report to appropriate persons or authority.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
Competence includes: • efficient and effective planning of shut down/start up • hazard analysis • completing plant records • communication • problem solving
Required knowledge
Demonstration of competence in this unit must include knowledge of the following: • principles of operation of plant/equipment • physics and chemistry relevant to the process unit and the materials processed • process parameters and limits, eg temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, eg radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • all items on a schematic of the plant item and the function of each • correct methods of starting, stopping, operating and controlling process • corrective action appropriate to the problem cause • function and troubleshooting of major components and their problems • types and causes of problems within operator's scope of skill level and responsibility. • architecture of the process/production systems • the plant • product specifications and tolerances • systems operating parameters • process control philosophies and strategies • the process • emergency shutdown procedures • physics, chemistry and mathematics relevant to the process • outside process knowledge and equipment operation as is relevant to the practical operation of equipment at that job level.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios and role plays. This unit of competency requires a significant body of knowledge which will be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant areas are recognised and an appropriate contribution made to their solution. These aspects may be best assessed using a range of scenarios/case studies/what-ifs as the stimulus with a walk-through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations which may have been generated from the past incident history of the plant, incidents on similar plants around the world, hazard analysis activities and similar sources.

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EVIDENCE GUIDE	
Context of and specific resources for assessment	Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. In a major hazard facility, it may be appropriate to assess this unit concurrently with: • *MSAPMOHS200A Work safely*. The person undertaking this competency is expected to be able to work under and manage situations of high pressure, in order to ensure the safe and efficient management of the control room production process and the safety of plant employees.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	Causes of shutdown may be: • planned, eg for maintenance or other planned work • unplanned, eg in response to a plant upset or equipment failure • emergency, eg in response to an automatic shutdown sequence or plant trip. The shutdown may be: • shutdown 'to cold', eg complete plant shutdown and purging of all process materials from equipment • short shutdown to allow minor work 'warm shutdown', eg partial shutdown, with retention of some or all of process materials • managing a plant trip and restart 'hot shutdown', eg short duration shutdown in response to a plant upset or trip This competency also includes: • coordinating the shift team • implementing emergency procedures • using the permit to work system (for repairs required). • This competency may apply to: • panel technicians • outside technicians • technicians seconded to a shut down role • other relevant personnel All operations are performed according to procedures.
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred

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RANGE STATEMENT	
	• reporting problems outside area of responsibility to designated person.
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Health, **safety and environment** (**HSE**)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit sector	Operational/technical

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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PMASUP236B Operate vehicles in the field

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	In a typical scenario an operations technician patrols areas of pipeline or follows pipelines across a variety of terrains looking for problems which require maintenance or reporting. During the course of their work they must check the vehicle for mechanical soundness before leaving base, ensure it is securely and adequately packed, make certain their communications equipment and contact schedule are in order and generally be prepared for long periods off-road.

Application of the Unit

Application of the unit	Generally the operations technician would be part of a team during field trips, though he/she may be required to undertake limited trips during which they would be expected to be capable of demonstrating competence in all parts of this unit. At all times they would be liaising and cooperating with their base station. The operations technician will: • check their vehicle daily for damage • ensure fuels and lubricant levels are maintained • effect minor repairs • communicate with their base station This unit has no prerequisites. However operators will have the appropriate class of driver's licence before taking charge of the vehicle.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare vehicle and secure load.	1.1. Conduct vehicle familiarisation checks before starting journey 1.2. Note and rectify any defects where possible or report vehicle for further attention/repair 1.3. Ascertain that all required fuel, water and other supplies required for the journey are available and in useable order 1.4. Inspect all ancillary equipment and operational accessories to ensure they have been attached or secured in a safe and agreed manner 1.5. Secure load including external loads, rear tray, roof racks, and any loads within the vehicle, using appropriate securing equipment.
2. Undertake journey	2.1. Familiarise oneself with the route to ensure that an appropriate route has been determined 2.2. Interpret access manuals and topographical maps in order to obtain required information for journey 2.3. Obtain relevant authorisations/notifications and accesses before starting the journey 2.4. Confirm and/or clarify or communicate journey details with relevant company personnel 2.5. Monitor driving conditions and requirements constantly, to meet any changes in terrain, weather conditions and road conditions and requirements 2.6. Monitor and maintain fluid levels and air pressures to ensure safe and efficient vehicle operations 2.7. Monitor vehicle constantly for any malfunctions or factors that may affect vehicle performance 2.8. Maintain vehicle speeds within all stated limits and road condition limitations to minimise the risk of personal injury, environmental damage and load damage 2.9. Maintain communication as required with the relevant company personnel to advise of progress and journey status. 2.10. Ensure seatbelts are worn by all personnel while the vehicle is in motion.
3. Operate vehicle	3.1. Apply knowledge of vehicle differences to the driving requirements of four wheel drive and conventional vehicles 3.2. Adhere to general principles of four wheel driving in negotiating a variety of terrains and driving conditions 3.3. Use defensive driving techniques 3.4. Observe additional precautions for night driving

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ELEMENT	PERFORMANCE CRITERIA
	3.5. Drive to suit road conditions 3.6. Observe rules prohibiting driving under the influence of alcohol and other performance inhibiting substances.
4. Finalise journey	4.1. Communicate and confirm termination of journey with the relevant company personnel 4.2. Visually inspect the vehicle to ensure that vehicle is in good repair and order 4.3. Unsecure trailer loads and prepare for unloading utilising the agreed uncoupling process 4.4. Report faults or damage to vehicle to appropriate personnel.
5. Recover vehicle	5.1. Identify and assess options for recovery of an immobilised vehicle 5.2. Operate recovery equipment safely 5.3. Perform a battery 'jump start' safely 5.4. Observe safety precautions when rigging cables and chains 5.5. Demonstrate various methods of vehicle recovery 5.6. Change a wheel on a properly jacked vehicle.
6. Maintain vehicle safety	6.1. Observe appropriate speeds for the road conditions 6.2. Ensure all personnel use a seat belt 6.3. Observe site specific vehicle entry restrictions 6.4. Follow appropriate search and rescue notification procedures 6.5. Follow appropriate procedures for passing large or heavy vehicles.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
Competence includes the ability to distinguish between causes of vehicle problems/alarms/fault indications such as: • instrument failure/malfunction • electrical failure/malfunction • mechanical failure/malfunction.
Required knowledge
The knowledge referred to in the Evidence Guide for this unit includes: • local/company vehicle rules and regulations • hazards and risks of off-road travel • requirements for reporting and recording vehicle movements • communications arrangements (backup methods need to be considered) • site or area response plan to detail • procedures to be followed when an incident is reported • actions to be followed when a traveller is recorded as overdue • responsibilities for monitoring vehicle journeys and determining immediate and follow-up actions under the system.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment for this unit of competency will be on an off-road vehicle. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for timely assessment of parts of this unit of competency (eg Elements 1, 3 and 4). Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios, role plays and 3D virtual reality interactive systems. In the case of evacuation training or training for competencies practised in life threatening situations, simulation may be used for the bulk of the training. This unit of competency requires an application of the knowledge contained in off-road vehicle operation and the equipment integral to its use, to the level needed to maintain control and recognise and resolve problems. This can be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant areas are recognised and an appropriate contribution made to their solution.

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EVIDENCE GUIDE	
	These aspects may be best assessed using a range of scenarios/case studies/what ifs as the stimulus with a walk through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations, which may have been generated from the past incident history of the vehicle, incidents on similar vehicles around the world, hazard analysis activities and similar sources.
Context of and specific resources for assessment	Assessment will require access to an operating well over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all organisations it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. Consider co-assessment with: • *PMASUP241B Maintain pipeline easements* • *PMASUP242B Monitor pipeline civil works* • *PMASUP343B Monitor and maintain pipeline cathodic protection systems* • *PMASUP344B Monitor and control repairs and modifications on operational pipe* • *PMAOPS230B Monitor, operate and maintain pipeline stations and equipment*.
Guidance information for assessment	Assessment process and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This unit of competency includes all such vehicles and equipment which form part of the field operator's kit. For your organisation this may include (select relevant items): • 4wd vehicles, eg utility, troop carrier or station wagon • trucks • communications equipment, ie 2 way radio, mobile or satellite phone, GPS • recovery equipment, ie snatch straps, slings, chains and shackles • trailers. Typical problems for your operations may include: • overheating (coolant, exhaust, driveline) • low oil pressure • electrical discharge/overcharge • tyre punctures • load shifts.
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit sector	Support/generic

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Competency field

Competency field	

Co-requisite units

Co-requisite units		

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PMASUP441C Decommission plant

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This competency covers the decommissioning of an existing plant/pipeline or major plant area, and its associated equipment. Decommissioning refers to the removal from service of plant/pipeline and equipment and its storage/'mothballing' or disposal. This unit does not cover the shutdown of a plant/pipeline - use *PMAOPS411B Manage plant shutdown and restart*.

Application of the Unit

Application of the unit	In a typical scenario, an existing plant/pipeline or major plant area, and its associated equipment, are planned to be taken out of service. The experienced technician organizes the systematic shutdown, cleaning out and preparation for safe 'moth-balling' all of the plant and equipment. This competency is typically performed by experienced technicians, likely to be the leaders of an operational team, usually working in conjunction with a decommissioning team, for the purpose of decommissioning plant/pipelines. As decommissioning is usually a team activity, the technician will take a lead technical role, rather than undertake all aspects on an individual basis. Much of the activity of successful decommissioning is in planning the activity and then supervising the work to ensure it is done safely and efficiently with no environmental damage. The technician may have no 'hands-on' role at all.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units	

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Contribute to decommissioning planning.	1.1. Apply process understanding to the planning process 1.2. Identify the role and purpose of the plant and equipment 1.3. Ensure the work is coordinated effectively with others involved on the work site 1.4. Identify process conditions and apply to hazard studies 1.5. Undertake investigations following on from hazard studies 1.6. Obtain materials necessary to complete the work and check against job requirements 1.7. Obtain tools and equipment necessary to carry out the work and check for correct operation and safety 1.8. Prepare plans to ensure that procedures are performed in the correct sequence 1.9. Obtain approvals where necessary from appropriate authorities to ensure decommissioning process proceeds in accordance with the plan. 1.10. Complete all appropriate documentation.
2. Isolate and decontaminate equipment/unit.	2.1. Interpret and apply decommissioning plan 2.2. Identify and use appropriate safety equipment and materials 2.3. Isolate and decontaminate equipment components as required 2.4. Dispose of contaminated materials or components as required 2.5. Complete required documentation.
3. Inspect, test and notify completion of work.	3.1. Select tools and equipment appropriate to the testing/ inspection requirements and utilise in accordance with manufacturer specifications and legislative requirements 3.2. Test/inspect in accordance with requirements 3.3. Ensure compliance with OHS legislative requirements for risk assessment prior to disposal 3.4. Ensure any required additional work is undertaken/initiated 3.5. Notify work completion.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
Demonstrated knowledge and ability to: • plan the decommissioning process • arrange resources as required • coordinate own work and the work of others, including on-site contractors/operators • interpret and solve operational problems as they arise and take appropriate action • document the decommissioning and recommendations for safe storage/maintenance/disposal.
Required knowledge
Competence to include the ability to apply and explain: • chemistry of materials involved • principles of operation of the process • principles of operation of the equipment involved • all items on a schematic of the plant and the function of each • correct methods of, stopping plant items • function of major components • HAZOP study process and the interpretation of findings • results and impact of a HAZAN study • hazardous substances legislation • the process of hazard identification, risk assessment and control • sources of hazard information (such as Material Safety Data Sheets) • safe disposal methods of materials and equipment • decontamination processes.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant/pipeline and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Simulation may be required to allow for assessment of parts of this unit. It is possible that a simulation will be required to ensure that the technician is competent before taking a significant role in a decommissioning activity. Decommissioning is an infrequent activity and so it may not be practical or equitable to wait for an actual decommissioning to occur to use this as the basis for assessment. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/ scenarios and role plays. This unit of competency requires a significant body of knowledge which will be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate, timely action is taken • obvious problems in related plant areas are recognised and an appropriate contribution made to their solution These aspects may be best assessed using a range of scenarios/case studies/what ifs as the stimulus with a walk through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations which may have been generated from the past incident history of the plant, incidents on similar plants around the world, hazard analysis activities and similar sources.

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EVIDENCE GUIDE	
Context of and specific resources for assessment	Assessment will require access to a plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required, as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. In a major hazard facility, it may be appropriate to assess this unit concurrently with relevant OHS units.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.

Context	This competency unit includes the functions of :
	• liaison with manufacturers, engineering personnel, designers, maintenance personnel
	• participation in hazard and operability studies (HAZOP) and hazard analysis studies (HAZAN)
	• removal of plant and equipment from service, which may include:
	  • 'mothballing'
	  • storage
	  • disassembly
	  • demolition
	• decontamination of equipment
	• disposal of equipment and waste.
	This competency unit includes the understanding and application of:
	• OHS regulations especially those related to plant
	• codes of practice
	• disposal procedures and regulations.
	All operations are performed in accordance with standard operating procedures.

Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes

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RANGE STATEMENT	
	• batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.

Unit Sector(s)

Unit sector	Support/generic

Competency field

Competency field	

Co-requisite units

Co-requisite units	

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PMLTEST300B Perform basic tests

Modification History

Unit Descriptor

This unit of competency covers the ability to perform tests using standard methods and with access to readily available advice. Personnel are required to demonstrate close attention to the accuracy and precision of measurements and the data obtained. In general, they do not calibrate equipment and make only limited adjustments to the controls. The unit of competency does not cover interpretation or analysis of results or troubleshooting equipment problems.
This unit competency has no prerequisites.
This unit of competency is applicable to laboratory/field assistants working in all industry sectors.
Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section This competency in practice.

Application of the Unit

Licensing/Regulatory Information

Pre-Requisites

Employability Skills Information

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.
Performance Criteria describe the level of performance required to demonstrate achievement of the element.

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Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Interpret test requirements	1.1 Review test request to identify samples to be tested, test method and equipment involved
	1.2 Identify hazards and enterprise controls associated with the sample, preparation methods, reagents and/or equipment
2 Prepare sample	2.1 Record sample description, compare with specification, record and report discrepancies
	2.2 Prepare sample in accordance with appropriate standard methods
3 Check equipment before use	3.1 Set up test equipment in accordance with test method
	3.2 Perform pre-use and safety checks in accordance with enterprise procedures and manufacturer's instructions
	3.3 Identify faulty or unsafe equipment and report to appropriate personnel
	3.4 Check calibration status of equipment and report any out of calibration items to appropriate personnel
4 Perform tests on samples	4.1 Identify, prepare and weigh or measure sample and standards to be tested
	4.2 Conduct tests in accordance with enterprise procedures
	4.3 Record data in accordance with enterprise procedures
	4.4 Perform calculations on data as required
	4.5 Identify and report 'out of specification' or atypical results promptly to appropriate personnel
	4.6 Shut down equipment in accordance with operating procedures

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5	Maintain a safe work environment	5.1	Use established safe work practices and personal protective equipment to ensure personal safety and that of other laboratory personnel
		5.2	Minimise the generation of wastes and environmental impacts
		5.3	Ensure safe disposal of laboratory and hazardous wastes
		5.4	Clean, care for and store equipment and reagents as required.

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Required Skills and Knowledge

Evidence Guide

The Evidence Guide describes the underpinning knowledge and skills that must be demonstrated to prove competence.

Critical aspects of competency

Competency must be demonstrated in the ability to perform consistently at the required standard. In particular, assessors should look to see that the candidate:

interprets enterprise procedure or standard methods accurately

uses safety information (for example, MSDSs) and performs procedures safely

checks test equipment before use

completes all tests within required timeline without sacrificing safety, accuracy or quality

calculates, records and presents results accurately and legibly

maintains security, integrity and traceability of all samples, data/results and documentation

cleans and maintains equipment.

Underpinning knowledge

Competency includes the ability to apply and explain:

purpose of test

principles of the standard method

pre-use equipment checks

relevant standards/specifications and their interpretation

sources of uncertainty in measurement and methods for control

enterprise and/or legal traceability requirements

interpretation and recording of test result, including simple calculations

procedures for recognition/reporting of unexpected or unusual results

relevant health, safety and environment requirements.

Assessment context and methods

This unit of competency is to be assessed in the workplace or simulated workplace environment.

The following assessment methods are suggested:

review of the quality of test data/results achieved by the candidate over time

inspection of records and workplace documentation completed by the candidate

feedback from peers and supervisors

observation of the candidate performing a range of basic tests

oral or written questioning to check underpinning knowledge of test procedures.

In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Questioning techniques should suit the language and literacy levels of the candidate.

Interdependent assessment of unit

This unit of competency may be assessed with:

PMLDATA200A Record and present data.

Resource implications

Resources may include:

standard laboratory equipped with appropriate equipment standards and materials

enterprise procedures and standard methods, equipment manuals

material safety data sheets (MSDSs).

This competency in practice

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Manufacturing

Standard testing methods may be viewed as 'legal' requirements that must be followed to ensure that a product manufactured in a chemical plant meets the specification by which it is sold to the customer. Technical assistants perform tests in a quality control laboratory to ensure that material meets 'legal' requirements and the material is safe and effective in use. Peroxides may be present in ether as a result of light-catalysed air oxidation. Peroxides are toxic and can give rise to mixtures which are explosive when distilled. Technical assistants test ether to ensure that the level of peroxide is within acceptable limits. The test is done by shaking ether with a solution of potassium iodide. After standing for 30 minutes in the dark the yellow colour of the aqueous phase, due to the liberation of iodine, must not be more intense than a prepared standard solution. These tests ensure the quality and safety of the ether.

Food processing

A Snack Food Company produces a range of high quality, impulse purchase snack foods. Some of these products are moisture and/or oxygen sensitive and are therefore packaged in multi-layer flexible packaging to provide optimum shelf-life. The packaging must also be able to withstand the rigours of the production and distribution process. While the packaging is purchased to meet the shelf-life and distribution specifications, the quality assurance program requires the periodic evaluation of the packaging materials against these specifications. A laboratory assistant uses standard methods to test the tearing resistance, bursting strength, impact resistance and permeability and/or leakage of the snack food packaging. Tests are also conducted on aspects of the manufacturing process that can affect shelf-life. These tests involve the measuring of the heat-seam strength and the sealing performance of the closure process. The test results are recorded by the laboratory assistant to verify the conformance of the materials to the supplier specifications and of the process to the manufacturing specifications. The assistant reports any anomalies or non-conformances to the appropriate personnel.

Key Competencies

The seven key competencies represent generic skills considered for effective work participation. The bracketed numbering against each of the key competencies indicates the performance level required in this unit. These are stand-alone levels and do not correspond to levels in the Australian Qualifications Framework (AQF).

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

Collecting, analysing and organising information	Communicating ideas and information	Planning and organising activities	Working with others and in teams	Using mathematical ideas and techniques	Solving problems	Using technology
Level 1	Level 1	Level 1	Level 1	Level 1	Level 1	Level 1

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Range Statement

The range of variables relates to the unit of competency as a whole. It allows for different work environments and situations that will affect performance.
Where reference is made to industry Codes of Practice, and/or Australian/international standards, it is expected the latest version will be used.
This unit of competency describes the work conducted by supervised laboratory assistants who perform a range of basic tests and measurements.
All operations must comply with relevant standards, appropriate procedures and/or enterprise requirements. These procedures include or have been prepared from:
Australian and international standards, such as:
AS ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories
AS/NZS 2243.2 Chemical aspects
AS 2243.6 Mechanical aspects
AS 2243.10 Storage of chemicals
AS 2830 Good laboratory practice
Codes of Practice (such as GLP and GMP)
material safety data sheets (MSDSs) and safety procedures
standard operating procedures (SOPs)
equipment manuals
equipment startup, operation and shutdown procedures
calibration and maintenance schedules
quality manuals
enterprise recording and reporting procedures
production and laboratory schedules
material, production and product specifications.
Codes of Practice.
Preparation of samples can include:
sub-sampling or splitting using procedures, such as: riffling, coning and quartering, manual and mechanical splitters
diluting samples
physical treatments, such as ashing, dissolving, filtration, sieving, centrifugation and comminution
moulding, casting or cutting specimens.
Typical tests carried out by laboratory/field assistants could include:
visual/optical tests of appearance, colour, texture, identity, turbidity, refractive index (alcohol content, Baume/Brix)
physical tests, such as:
density, specific gravity, compacted density
moisture content, water activity
particle size, particle shape, size distribution
chemical tests, such as:
gravimetric
colorimetric
electrical conductivity (EC), pH
specific ions using dipsticks and kits
nutrients (for example nitrates, orthophosphates) using basic kits

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ashes, including sulphated ashes
biological/environmental tests, such as:
pH, oxygen reduction potential (ORP), dissolved oxygen (DO), electrical conductivity
E coli using test kits
surface hygiene/presence of microbes
packaging tests, such as:
tearing resistance, bursting strength, impact resistance
permeability and/or leakage
mechanical tests, such as:
Emerson class
concrete slump
Other measurements may include:
simple ground surveys
meteorological parameters, such as: wind direction/strength, rainfall, max./min. temperature, humidity, solar radiation
simple background radiation survey
production/process parameters, such as temperature, flow, pressure
gas levels in a confined space.
Common measuring equipment may include:
dimension apparatus
dissolved oxygen (DO), electrical conductivity (EC)
analogue and digital meters, charts/recorders
basic chemical and biological test kits
dipsticks and site test kits (for example, HACK)
timing devices
temperature measuring devices, such as thermometers, thermocouples.
Hazards may include:
electric shock
biohazards, such as microbiological organisms and agents associated with soil, air, water, blood and blood products, human or animal tissue and fluids
solar radiation, dust, noise
chemicals, such as: sulphuric acid, fluorides, hydrocarbons
aerosols
sharps, broken glassware and hand tools
flammable liquids
dry ice and liquid nitrogen
fluids under pressure
sources of ignition
occupational overuse syndrome, slips, trips and falls
manual handling, working at heights and in confined spaces
crushing, entanglement, cuts associated with moving machinery or falling objects.
Enterprise controls to address hazards may include:
use of material safety data sheets (MSDS)
use of signage, barriers and service isolation tags
use of personal protective equipment, such as hard hats, hearing protection, sunscreen lotion, gloves, safety glasses, goggles, face guards, coveralls, gown, body suits, respirators and safety boots

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use of appropriate equipment, such as biohazard containers and cabinets, laminar flow cabinets
recognising and observing hazard warnings and safety signs
labelling of samples, reagents, aliquoted samples and hazardous materials
handling and storage of all hazardous materials and equipment in accordance with labelling, materials safety data sheets and manufacturer's instructions, enterprise procedures and regulations
cleaning and decontaminating equipment and work areas regularly using recommended procedures
following established manual handling procedures for tasks involving manual handling.
Minimising environmental impacts may involve:
recycling of non-hazardous waste, such as chemicals, batteries, plastic, metals, glass
appropriate disposal of hazardous waste
correct disposal of excess sample/test material
correct storage and handling of hazardous chemicals.

Health, **safety and environment**

All operations to which this unit applies are subject to stringent health, safety and environmental (HSE) requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

All operations assume the potentially hazardous nature of samples and require standard precautions to be applied. Users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council and State and Territory Departments of Health. All operations are performed in accordance with standard operating procedures.

Unit Sector(s)

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PMLTEST307B Prepare trial batches for evaluation

Modification History

Unit Descriptor

This unit of competence covers the ability to prepare trial batches of materials for evaluation. Materials can include soil, minerals and manufactured products, such as concrete, asphalt, food, plastics, paint and other industrial chemicals.
This unit of competency has no prerequisites.
This unit of competency is applicable to laboratory assistants working in all industry sectors. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section This competency in practice.

Application of the Unit

Licensing/Regulatory Information

Pre-Requisites

Employability Skills Information

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.
Performance Criteria describe the level of performance required to demonstrate achievement of the element.

Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Prepare for trial batch mixing	1.1 Identify the job, materials, appropriate procedures and safety requirements
	1.2 Record description of the job to be undertaken, compare with specification and report any variations

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		1.3	Select and prepare tools, equipment and materials in accordance with job requirements
		1.4	Confirm the properties and quantities of materials to be used
		1.5	Confirm that the required materials are available and ready for use
2	Mix trial batch for evaluation	2.1	Measure out quantities of materials ready for mixing
		2.2	Mix the materials according to established procedures
		2.3	Discharge the mixture ready for inspection and testing according to established procedures
		2.4	Record details of the mix and any observations according to established procedures
3	Evaluate properties of the mixture by inspection and standard test methods	3.1	Obtain representative samples of the mix for testing
		3.2	Perform specified tests according to established procedures
		3.3	Handle and transport samples in accordance with established procedures
		3.4	Label samples and record details in accordance with established procedures
4	Clean equipment and dispose of materials	4.1	Clean mixing, measuring, sampling and testing equipment after use
		4.2	Return unused materials to storage
		4.3	Dispose of excess materials safely and ethically
5	Maintain records	5.1	Record data in accordance with established procedures
		5.2	Maintain equipment records in accordance with established procedures
		5.3	Maintain confidentiality of enterprise information

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6 Maintain a safe work environment	6.1 Use established safe work practices and personal protective equipment to ensure personal safety and that of other laboratory personnel
	6.2 Minimise the generation of wastes and environmental impacts
	6.3 Ensure safe disposal of laboratory and hazardous wastes
	6.4 Clean, care for and store equipment and reagents as required.

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Required Skills and Knowledge

Evidence Guide

The Evidence Guide describes the underpinning knowledge and skills that must be demonstrated to prove competence.

Critical aspects of competency

Competency must be demonstrated in the ability to perform consistently at the required standard. In particular, assessors should look to see that the candidate:

calculates batch quantities, concentrations and other relevant parameters
follows standard operating procedures
measures quantities accurately
takes representative samples
identifies and describes materials accurately
handles and transports samples correctly
records sampling and testing information
uses tools and equipment effectively and efficiently
observes, interprets and reports atypical situations
communicates problems to appropriate personnel
records and communicates work results
works safely
interprets information from materials safety data sheets.

Underpinning knowledge

Competency includes the ability to apply and explain:

the properties of mixing materials and how they affect the properties of the final product
hazards involved with materials and equipment involved
measurement of mass and volume
basic calculations involving SI units, proportion, ratio, and percentage
representative sampling
uses of various materials/enterprise products
basic testing methods for relevant materials
enterprise traceability requirements
relevant health, safety and environment requirements.

Assessment context and methods

This unit of competency is to be assessed in the workplace or simulated workplace environment.

The following assessment methods are suggested:

analysis of trial batches prepared by the candidate over a period of time to ensure accurate and consistent work is obtained within required timelines
inspection of workplace documentation completed by the candidate
feedback from peers and supervisors
use of suitable simulation and/or a range of case studies/scenarios.

In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Questioning techniques should suit the language and literacy levels of the candidate.

Interdependent assessment of unit

This unit of competency may be assessed with:

PMLSAMP302A Handle and transport samples or equipment

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PMLSAMP400B Prepare representative samples in accordance with a sampling plan
PMLTEST300B Perform basic tests.

Resource implications

Resources may include:
standard facility with appropriate tools, equipment and materials
enterprise procedures, MSDS, product formulation/specifications.

This competency in practice

Construction materials

A laboratory assistant works for a concrete manufacturer. A client requires concrete for a specific project that cannot be supplied using existing standard mixes. The manufacturer must use special aggregates and cement to meet the durability and strength specifications for the project. The laboratory manager obtains quantities of the materials for evaluation purposes. The assistant tests the aggregates to determine their grading properties. From these results, he/she designs a mix to satisfy the project specifications using a standard design method. The mix requires the use of pozzolanic materials and admixtures that were obtained from the suppliers.

The manager provides the assistant with the batch quantities required to produce one cubic metre of concrete. To test the mix design, the assistant will produce a 20-litre batch in the laboratory. She/he calculates that this quantity will provide sufficient material for the required tests, without undue waste. She/he calculates the quantity of each material required for the trial batch. The assistant selects and prepares the tools and equipment she/he needs to mix, sample and test the concrete. She/he wears overalls, safety boots and glasses, and uses a barrier cream. She/he measures out the quantities required for the trial batch, charges the mixer and allows it to mix for the specified time. She/he then discharges the concrete onto a suitable surface. She/he checks its slump, cohesiveness and air content, recording the data on standard enterprise forms. The manager inspects the concrete, and decides that it is over-sanded and has excessive slump. She/he adjusts the batch quantities and draws up amended values. She/he disposes of the excess concrete and cleans the equipment and tools. She/he then mixes a new batch using the amended figures. This process continues until the manager is satisfied with the concrete quality. She/he then mixes a larger batch so that she/he can prepare specimens for testing its hardened-state properties.

Key Competencies

The seven key competencies represent generic skills considered for effective work participation. The bracketed numbering against each of the key competencies indicates the performance level required in this unit. These are stand-alone levels and do not correspond to the Australian Qualifications Framework (AQF).

Level (1) represents the competence to undertake tasks effectively
Level (2) represents the competence to manage tasks
Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

Collecting, analysing and organising information	Communicating ideas and information	Planning and organising activities	Working with others and in teams	Using mathematical ideas and techniques	Solving problems	Using technology
Level 1	Level 1	Level 1	Level 1	Level 1	Level 1	Level 1

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Range Statement

The range of variables relates to the unit of competency as a whole. It allows for different work environments and situations that will affect performance.
Where reference is made to industry Codes of Practice, and/or Australian/international standards, it is expected the latest version will be used.
This unit of competence describes work conducted by laboratory assistants, generally working under the guidance of a senior technician, scientific officer, laboratory supervisor/manager.
Operations are performed in accordance with laboratory and/or enterprise procedures, and appropriate legislative requirements. These procedures and requirements can include or be prepared from:
industry Codes of Practice
environmental legislation and regulations
standard operating procedures (SOPs)
equipment manuals
equipment start-up, operation and shutdown procedures
calibration and maintenance schedules
quality manuals
enterprise recording and reporting procedures
production and laboratory schedules
material, production and product specifications.
Materials, tools and equipment used may include:
soils, concrete, asphalt, aggregates, polymers, ceramics, metals, foodstuffs, solvents
ovens, sieves, balances, volumetric measures, mixers
hand tools, including shovels, scoops, spatulas
consumables, including sample bags, labels
documentation, including specifications, manufacturers' handbooks, worksheets
test equipment appropriate to the various materials.
Typical skills may include:
working safely with equipment and hazardous materials
working safely in laboratory conditions
setting up and maintaining tools and equipment
using tools and equipment to perform basic sampling techniques
using tools and equipment to perform basic testing techniques
basic calculations
observing and recording information on testing and sampling
making basic measurements of volume and mass
handling and storing materials appropriately.
Typical problems may include:
not following standard operating procedures
measurement errors
calculation errors
materials of unreliable quality
insufficient mixing
poor sampling procedures
equipment breakdown and breakage.
Hazards may include:
electric shock

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biohazards, such as microbiological organisms and agents associated with soil, air, water
solar radiation, dust, noise
chemicals
sharps, broken glassware and hand tools
flammable liquids and gases
fluids under pressure
manual handling heavy objects
crushing, entanglement, cuts associated with moving machinery or falling objects.
Safety procedures may include:
recognising hazard warnings and safety signs
use of personal protective equipment, such as hard hats, hearing protection, sunscreen lotion, gloves, safety glasses, goggles, face guards, coveralls, safety boots
use of material safety data sheets (MSDS)
following established manual handling procedures
regular cleaning and/or decontaminating of equipment and work areas
ensuring access to service shut off points
identifying and reporting operating problems or equipment malfunctions.

Health, **safety and environment**

All operations to which this unit applies are subject to stringent health, safety and environmental (HSE) requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

All operations assume the potentially hazardous nature of samples and require standard precautions to be applied. Users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council and State and Territory Departments of Health. All operations are performed in accordance with standard operating procedures.

Unit Sector(s)

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PMLTEST403B Assist with geotechnical site investigations

Modification History

Unit Descriptor

This unit of competence covers the ability to assist with geotechnical site investigations. This competency is typically performed by laboratory technicians working under the guidance of a geotechnical (para)-professional or engineer.
This unit of competency has no prerequisites.
This unit of competency is applicable to laboratory technicians working in the construction, mining and drilling industry sectors.
Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section This competency in practice.

Application of the Unit

Licensing/Regulatory Information

Pre-Requisites

Employability Skills Information

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.
Performance Criteria describe the level of performance required to demonstrate achievement of the element.

Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Prepare for on-site operations	1.1 Identify the job, location, appropriate procedures and safety requirements
	1.2 Identify site hazards and use appropriate personal protective equipment and safety procedures as specified for job and materials to be used

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		1.3	Record description of the job to be undertaken, compare with specification and report any variations
		1.4	Select and prepare tools, equipment and materials in accordance with job requirements
		1.5	Select suitable transport for site access
		1.6	Ensure site access requirements, such as entry permits and safety inductions have been organised
2	Assist with excavation of boreholes, test pits and/or trenches	2.1	Identify the sampling/testing location
		2.2	Excavate or supervise excavation to the sampling/ testing depth, minimising disturbance and potential contamination of the site
		2.3	Identify materials and record changes of strata, test results, and other relevant information
		2.4	Ensure materials from different strata are kept separate
		2.5	Terminate the excavation at the appropriate depth, recording the reason for termination
		2.6	Clean up on completion, backfilling or sealing the excavation or ensuring that it is left in a safe and uncontaminated condition
3	Assist with sampling	3.1	Prepare sampling equipment and materials
		3.2	Take disturbed and undisturbed samples in accordance with established practices
		3.3	Label samples and record details in accordance with established practices
		3.4	Handle and transport samples in accordance with established practices
		3.5	Clean and maintain sampling equipment, avoiding environmental damage, including stormwater contamination
4	Assist with testing	4.1	Prepare test equipment and materials
		4.2	Perform or assist in performing tests in accordance

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		with established practices
	4.3	Record test data in accordance with established practices
	4.4	Clean and maintain testing equipment, avoiding environmental damage, including stormwater contamination
5 Maintain records	5.1	Record data in accordance with established practices
	5.2	Maintain equipment records in accordance with established practices
	5.3	Maintain confidentiality of enterprise information.

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Required Skills and Knowledge

Evidence Guide

The Evidence Guide describes the underpinning knowledge and skills that must be demonstrated to prove competence.

Critical aspects of competency

Competency must be demonstrated in the ability to perform consistently at the required standard. In particular, assessors should look to see that the candidate:

identifies and locates site services, sampling and testing sites
identifies problems in siting (for example, services) immediately
takes representative samples
identifies and describes materials accurately
handles and transports samples correctly
records sampling and testing information
uses tools and equipment effectively and efficiently
observes, interprets and reports on the geotechnical conditions
communicates problems to appropriate personnel
records and communicates work results
works safely.

Underpinning knowledge

Competency includes the ability to apply and explain:

the basic concepts, purposes and principles of geotechnical site investigation
identification and classification of materials
engineering properties of soil and rock materials
representative sampling and testing
map and drawing interpretation
uses of soil and rock materials in engineering and construction
in-situ testing methods
relevant health, safety and environment requirements.

Assessment context and methods

This unit of competency is to be assessed in the workplace or simulated workplace environment.

It is strongly recommended that assessment is conducted through observation over time. The timeframe must allow for adequate assessment of operation under all normal and a range of abnormal conditions. Where this is not practical, additional assessment techniques must be used.

The following assessment methods are suggested:

review of work outputs over a period of time to ensure accurate and consistent work is obtained within required timelines
examples of completed workplace documentation
feedback from peers and supervisors
oral or written questioning.

In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Questioning techniques should suit the language and literacy levels of the candidate.

Interdependent assessment of unit

This unit of competency may be assessed with:

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PMLSAMP302A Handle and transport samples or equipment
PMLSAMP400B Obtain representative samples in accordance with a sampling plan
PMLTEST300B Perform basic tests.

Resource implications

Resources may include:
access to sites, tools, equipment
enterprise procedures, sampling plans, test methods and equipment manuals.

This competency in practice

Construction materials

A geotechnical consultancy company is carrying out the investigation for the construction of an industrial complex involving building pads and roadways. A contract drilling company has been hired to carry out auger drilling for the building pad foundations. The drill rig will be used to perform standard penetration tests in some boreholes to determine bearing capacities. Undisturbed sample tubes will be pushed to obtain samples for consolidation testing in the laboratory.

A senior technician is in charge of site activities, and arranges for a drill rig. She/he plans a program of drilling, sampling and testing. A laboratory assistant is allocated to carry out the majority of site activities. These include overseeing drilling, testing and sampling operations. He/she is provided with a marked-up plan of the site showing borehole locations so that he/she can direct where to drill. The senior technician makes site visits every second day to oversee the work.

The drilling contractor operates the drill rig, takes tube samples, performs the standard penetration tests and cases the hole if required, as directed by the senior technician. The assistant records and samples the soil profile, seals the sample tubes with wax and labels them. He/she also records the SPT readings and bags and labels the material from the split-spoon sampler. Each borehole is capped to prevent access by unauthorised persons so that the assistant can record standing water level 24 hours after the hole has been drilled. He/she wears a helmet, work boots and earmuffs while working near the rig. He/she covers up and wears sunscreen while working in the sun and drinks large quantities of water.

The assistant also excavates hand auger holes to a depth of one metre at regular intervals in the proposed roadways to obtain samples for California Bearing Ratio tests. Adjacent to each, he/she performs a dynamic cone penetrometer test to two metres to assess the in-situ material. He/she records the logs of the auger holes and the test results on the company's standard data sheets and backfills each auger hole immediately after sampling.

He/she reports each day's activities to the senior technician using the company's standard summary form. He/she is confident to identify soil types thus minimising the need for laboratory testing of the samples taken. Based on the field logs, cross-sections of the site can be drawn so that the designer can assess its geotechnical characteristics and determine the extent of any further investigations.

Key Competencies

The seven key competencies represent generic skills considered for effective work participation. The bracketed numbering against each of the key competencies indicates the performance level required in this unit. These are stand-alone levels and do not correspond to the Australian Qualifications Framework (AQF).

Level (1) represents the competence to undertake tasks effectively
Level (2) represents the competence to manage tasks
Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

Collecting,	Communic	Planning	Working	Using	Solving	Using

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analysing and organising information	ating ideas and information	and organising activities	with others and in teams	mathematical ideas and techniques	problems	technology
Level 2	Level 2	Level 2	Level 2	Level 2	Level 2	Level 2

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Range Statement

The range of variables relates to the unit of competency as a whole. It allows for different work environments and situations that will affect performance.
Where reference is made to industry Codes of Practice, and/or Australian/international standards, it is expected the latest version will be used.
This unit of competence describes the work conducted by laboratory operators or technicians conducting sampling and testing at construction, mining or drilling sites.
Operations are performed in accordance with laboratory and/or enterprise procedures, and appropriate legislative requirements. These procedures and requirements may include or have been prepared from:
industry Codes of Practice
environmental legislation and regulations
standard operating procedures (SOPs)
equipment manuals
equipment start-up, operation and shutdown procedures
calibration and maintenance schedules
quality manuals
enterprise recording and reporting procedures
production and laboratory schedules
material, production and product specifications.
Site hazards may include:
solar radiation, dust and noise
manual handling of heavy materials and equipment
working in/on trenches, confined spaces, wet and uneven surfaces, heights, slopes
vehicular and pedestrian traffic.
Safety procedures may include:
location of site services before investigations commence
use of material safety data sheets (MSDSs)
use of personal protective equipment, such as hard hat, hearing protection, sunscreen, gloves, masks, goggles, coveralls, safety boots
handling, and storage of (hazardous) materials and equipment in accordance with labels, MSDS, manufacturer's instructions, enterprise procedures and regulations
regular cleaning of equipment and vehicles
machinery guards
signage, barriers, flashing lights, traffic control.
Tools and equipment may include:
hand tools, including shovels, crowbars, scoops, spanners, wrenches, tape measure
consumables, including sample bags, labels, sample tubes, wax
documentation, including maps, plans, worksheets
field test equipment, including DCP, SPT, shear vane, pocket penetrometer, water level indicator
safety clothing and equipment, including helmet, boots, gloves, earmuffs, glasses
excavation equipment, including hand and power augers.
Typical skills may include:
working safely with equipment and around earthmoving plant
driving safely on- and off-road
working safely in field conditions

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setting up and maintaining tools and equipment
using tools and equipment to perform basic sampling techniques
using tools and equipment to perform basic in-situ testing techniques
cleaning equipment before leaving site in compliance with environmental authority requirements
reading site plans and operating GPS equipment to locate sampling positions
identification of soil, rock and fill materials
observing and recording information on testing and sampling
making basic measurements of plan location and depth
handling and storing samples appropriately.
Typical problems include:
caving of the excavation
drilling difficulties
not knowing the requirements of the design engineer
not understanding the nature of the item being designed (for example, retaining wall, piled structure, earthworks)
sample loss during retrieval
knowing when to stop a hole, or what and when to test and sample
misidentification of samples and sampling locations
equipment breakdown and breakage
environmental problems and issues, including site access, inclement weather, traffic, wildlife, vegetation, construction activities.

Health, **safety and environment**

All operations to which this unit applies are subject to stringent health, safety and environmental (HSE) requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

All operations assume the potential hazardous nature of samples and require standard precautions to be applied. Users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council and State and Territory Departments of Health. All operations are performed in accordance with standard operating procedures.

Unit Sector(s)

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PUAAMS007B Coordinate search and rescue operations

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

This unit covers the competency to coordinate a Search and Rescue incident.

Application of the Unit

Application of the Unit

The application of this unit in the workplace - the environments, complexities and situations involved - will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

This text will be useful for the purposes of job descriptions, recruitment advice or job analysis; where possible, it will not be too job specific to allow other industries to import it into other Training Packages, where feasible.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

Nil

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Prepare search plan**	1.1 Search and rescue ***assets*** and potential assets are identified and recorded in ***databases*** 1.2 ***Strategic*** and ***tactical objectives*** are identified in accordance with unit plans 1.3 Strategies to achieve objectives are identified in accordance with organisational policies and procedures 1.4 Risk management strategies are identified and incorporated/conducted in accordance with policy guidelines 1.5 ***Information management strategies*** are identified and applied in accordance with organisational policies and procedures 1.6 Search and Rescue procedures and policies are communicated to interested and affected persons, groups and organisations in accordance with the needs of those people
2. **Apply datum search planning principles**	2.1 A ***last known***/***most probable position*** is established from available data 2.2 Initial search procedures are implemented in accordance with the National Search and Rescue manual 2.3 ***Calculations*** are made to establish intended track/area/position in accordance with planned route 2.4 Time frame for survival of the missing person(s) is calculated in accordance with ***policies and procedures protocols*** 2.5 ***Physiological*** and ***environmental factors*** are determined as a basis for decision making 2.6 A search area is calculated consistent with organisational policies and procedures 2.7 ***Search pattern and track spacing*** is determined consistent with organisational policies and procedures 2.8 A probability of detection factor is calculated consistent with organisational policies and procedures 2.9 Acceptability of probability of detection factor is evaluated consistent with organisational policies and procedures

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ELEMENT	PERFORMANCE CRITERIA
	2.10 Search area is recalculated or redefined, determined by availability of assets, changing weather conditions and search time available
3. **Apply rescue-planning principles**	3.1 The ***nature of problem/distress is determined*** in accordance with the available information
	3.2 Rescue resources are identified, mobilised and monitored consistent with organisational policies and procedures
	3.3 Operational risks are assessed and minimised in accordance with policies, procedures and best practices
	3.4 ***Survivor delivery points*** are identified in accordance with requirements and capability of the rescue platform
	3.5 Physiological, geographic and medical factors are considered for rescue and delivery as per the situational requirements
	3.6 ***Time factors*** are considered as per the situational requirements
	3.7 The chosen solution is evaluated and reported against the determined criteria in accordance with organisational policies and procedures
4. **Evaluate operational direction**	4.1 The search and rescue plan is implemented and amended as dictated by the requirements of the situation
	4.2 A process of continual evaluation is applied in accordance with policies and procedures protocol
	4.3 Contingency planning is conducted in accordance with organisational policies and procedures
	4.4 Regular briefings and debriefings are conducted in accordance with organisational policies and procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

- The ability to:
- a knowledge of coaching and team building concepts
- collect and analyse information
- develop a compromised search area to suit available assets
- effectively communicate and consult with a range of individuals by a range of means including fax
- identify potential search patterns and their use pertaining to terrain
- plan for results
- telephone and face-to-face
- use initiative to achieve goals

Required Knowledge

- Evidence of:
- a knowledge of potential rescue platforms' capabilities and limitations
- an understanding of coronial requirements in relation to SAR
- an understanding of hypothermia/hyperthermia factors
- an understanding of Risk Management principles
- an understanding of the Personal Development Plan

Evidence Guide

EVIDENCE GUIDE

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EVIDENCE GUIDE

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Knowledge of defining the search area preparing search and rescue plans and making recommendations to the Senior Search and Rescue Officer that are based on research **Consistency in performance** Evidence should be gathered over a period of time in a range of actual or simulated workplace environments
Context of and specific resources for assessment	**Context of assessment** Competence must be demonstrable for the relevant work situation by day or night. The assessment for this unit is most effectively undertaken on the job but may be undertaken in a simulation eg Search and Rescue Exercise - (SAREX) **Specific resources for assessment** On job assessment will not entail additional resources however, rosters may need to be amended in order for simulation eg Search and Rescue exercise (SAREX) to be effected
Guidance information for assessment	Information that will assist or guide assessment will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Databases may include	contact names telephone numbers addresses (where appropriate) aircraft/vessel details aircraft/vessel requirements Databases are maintained by updating details on a regular basis as determined by local policies and procedures
Assets may include	aircraft including helicopters Australian Defence Force aircraft vessels and personnel police equipment and personnel civilian vessels volunteer groups clubs and associations
Strategic objectives may include	the systematic planning for the provision of Search and Rescue services and includes identification of emerging issues
Tactical objectives may include	the management of specific operations and includes resourcing coordinating reporting etc
Policies and procedures protocols may include	National Search and Rescue manual international search and rescue manuals and reference texts legislation relevant to the operation/incident/response legislation relevant to the organisation

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RANGE STATEMENT

	operational corporate and strategic plans operational Standing Operating Procedures operational performance standards organisational personnel practices and guidelines organisational quality standards
Last known/most probable position may include	gathering intelligence to establish: route taken last verbal/radio or other contact known patterns based on historical/routine data navigation plan
Physiological constraints may include	hypothermia hyperthermia physical condition age sex mental condition health
Environmental factors may include	terrain weather conditions
Technical manuals documentation or relevant publication may include	Search and Rescue manuals medical charts flight plans sail plans
Information management strategies may include	communication flow use of technology compatibility audit trails standardised information reporting procedures and formats
Calculations may include	using manual or computer systems

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RANGE STATEMENT

	utilising compasses protractors time/distance/speed calculators rulers and formulae Calculations include sweep width and track spacing calculations for persons vessels and aircraft calculations in area - time - velocity - spacing probability of detection factors time/distance/speed calculations time frame for survival and mobility calculations
Calculating a search area may include	the intended track/splash point/last known position and time vectorial factors wind current drift leeway and other weather factors positional error and safety factors
Determining a search pattern and track spacing may include	taking into account environmental factors including: weather conditions currents terrain target type including: person type of vessel/life raft; and physiological factors including body mass clothing medical conditions and state of mind
Determining the nature of the problem may include	consideration of such factors as: size of area time of day

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RANGE STATEMENT

	number of lives at risk location/accessibility condition of survivors capacity of available resources and speed of rescue platform(s)
Surviving delivery points may include	consideration of safe areas to alight survivor hospital facilities medical facilities
Time factors may include	time frame for survival speed of rescue platform time of mobilisation transit times rescue platform endurance
Continual evidence may include	reviewing available data monitoring changing weather conditions monitoring assets capabilities reassessing requirements assessing available daylight for search

Unit Sector(s)

Not applicable.

Corequisite Unit/s

Co-requisite Unit/s Nil

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PUAFIR201B Prevent injury

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

This unit covers the competency associated with the identification, avoidance, review, and evaluation of workplace risks and hazards, maintenance of personal safety and the reporting to supervisors and team members.

Application of the Unit

Application of the Unit

The application of this unit in the workplace - the environments, complexities and situations involved - will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

This text will be useful for the purposes of job descriptions, recruitment advice or job analysis; where possible, it will not be too job specific to allow other industries to import it into other Training Packages, where feasible.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

Nil

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Identify workplace hazards and risks and advise others**	1.1 Procedures and practices are followed to identify workplace ***hazards*** and risks 1.2 Appropriate procedures for dealing with hazards in the workplace are followed in accordance with Occupational Health and Safety (OH&S) guidelines and the organisation's procedures 1.3 ***Contact*** is maintained at all times with other crew members and supervisor 1.4 Hazards in the work area and warnings of hazardous situations are recognised and reported to designated personnel 1.5 Stressful situations are recognised and support is sought or given to minimise effect
2. **Implement hazard control procedures**	2.1 ***Personal protective clothing and equipment*** is selected and donned in accordance with the organisation's procedures and within its limitations 2.2 Appropriate procedures and work instructions for controlling risks and hazards are followed 2.3 Personal health is protected in accordance with legislative and organisation's procedures 2.4 Equipment appropriate to dealing with a hazard is used in accordance with standard operating procedures 2.5 Controls are implemented to minimise damage to the environment 2.6 Fluid and food intake and rest breaks are maintained in accordance with environmental and working conditions and the organisation's policy 2.7 Assistance is given to crew members in danger while maintaining personal safety in accordance with the organisation's procedures
3. **Review effectiveness of hazard control procedures**	3.1 Hazard controls are monitored to ensure continued effectiveness 3.2 Changes in incident behaviour and conditions are reported immediately to supervisor 3.3 Factors which may create or increase ***risk*** to life, property or the environment are identified, reported and controlled in so far as possible
4. **Participate in the**	4.1 OH&S issues are raised with designated

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ELEMENT	PERFORMANCE CRITERIA
implementation of OH&S in the workplace	personnel in accordance with procedures and OH&S legislation 4.2 Contributions to OH&S implementation in the workplace are made within organisation's procedures and scope of responsibilities and competencies 4.3 Activities/debriefings are undertaken which ***alleviate occupational stress***

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

identification of typical hazards in the workplace

use of protective clothing and equipment

Required Knowledge

Health and fitness requirements such as diet and nutrition, exercise, impact of smoking, alcohol and drugs on the body

Occupational hazards encountered in the workplace such as structural collapse, electricity, chemicals, dust, wildfires, extreme temperatures, biological, radiation, hazardous atmospheres, flammable and combustible liquids and gases and manual handling

Personal protection such as clothing and equipment requirements, survival in life threatening situations and health hazards

Signs of occupational stress, limiting stress, dealing with stress and seeking assistance

Signs of fatigue and dealing with fatigue

Methods of hazard control and reporting in accordance with the organisation's procedures

Procedures for participating in OH&S arrangements

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Evidence Guide

EVIDENCE GUIDE

Critical aspects for assessment and evidence required to demonstrate competency in this unit	It is essential for this unit that competence be demonstrated in: correct identification of hazards in the workplace application of the organisation's procedures including the correct selection and use of PPE advising and reporting of workplace hazards in accordance with the organisation's requirements notification of risk to the team and supervisor in a timely manner **Consistency in performance** Evidence should be gathered over a period of time in a range of actual or simulated workplace environments
Context of and specific resources for assessment	**Context of assessment** A combination of oral or written presentations, observations, on the job and/or in a range of simulated environments **Specific resources for assessment** Availability of appropriate protective clothing, equipment and organisational procedures
Guidance information for assessment	Information that will assist or guide assessment will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Workplaces may include	locations where activities and operations may occur such as structures, open spaces, water, public and private property, (including crown land), mobile property, confined spaces
Activities to alleviate occupational stress include	avoidance limiting exposure withdrawal defusion/debriefing counselling services referral to medical services or relevant government agencies
Hazards must include those associated with	urban, rural and aircraft fires training and simulation activities hazardous materials electricity
and may also include	prescribed burning activities vehicle and industrial rescue/extrication flood, storm and tempest rescues travelling in vehicles and travelling in aircraft
The nature of the hazard must include	**Incident** chemical spills such as those involving dangerous goods; vapours/poisonous gases/smoke; contaminated fire water; explosions/flammability; radioactivity; environmental contamination of air/land/water, appliances and equipment **Biological** biological such as infections, bites, stings, radiation

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RANGE STATEMENT

	Personal
	heat stress; dehydration
	psychological such as critical incident stress; shock, drownings
	Environmental
	fire and explosions; falling objects (trees, masonry, rocks etc.); subsidence; water load; structural collapse, radiant heat
	entrapment by fire in a vehicle or on foot
	chemical types
	heavy machinery
	confined space/structure
and may also include	aerial retardant drops
	broken terrain
Risk control measures must include	use of clothing and equipment to provide protection
	eye, sight, hearing protection
	appropriate training
	barriers
	vehicle protection hoses and devices
	survival techniques
	life support equipment/features
and may also include	spill clean up kits
	electrically insulated tools and equipment
	fire blankets/roll over protection
	goggles, face shield, hearing protection and chainsaw chaps
	adequate food, fluid and other welfare needs during extended operations
Personal protective clothing and equipment must include	Turnout uniform and gloves
	respiratory protection
	eye protection
and may also include	face shield

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RANGE STATEMENT

	chemical protective clothing personal lines personal distress units personal accessories kit chainsaw chaps
Life support equipment/ features may include	radiation shielding vehicle cabins with/without sprays low water level indicators protective vests fire blankets first aid kit
Factors which must require evaluation and review include	available resources traffic and spectators wind strength/direction temperature and relative humidity fire development/behaviour structural and equipment integrity water supply/pressure vegetation type topographical features including slope, terrain and aspect
Contact with crew members and supervisors must include	visual touch radio verbal
and may also may include	electronic and written
Designated personnel must include	other crew members/supervisors/OH&S representatives

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Unit Sector(s)

Not applicable.

Corequisite Unit/s

Co-requisite Unit/s	PUATEA001B Work in a team

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PUAFIR207B Operate breathing apparatus open circuit

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

This unit covers the competency associated with the operation and maintenance of breathing apparatus equipment in an irrespirable atmosphere.

Application of the Unit

Application of the Unit

The application of this unit in the workplace - the environments, complexities and situations involved - will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

This text will be useful for the purposes of job descriptions, recruitment advice or job analysis; where possible, it will not be too job specific to allow other industries to import it into other Training Packages, where feasible.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

PUAFIR201B Prevent injury

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Conduct pre-donning checks and tests on breathing apparatus**	1.1 ***Breathing apparatus*** is inspected for immediate use in accordance with the organisation's procedures 1.2 Faulty or damaged equipment is reported and recorded in accordance with the organisation's procedures
2. **Don and check breathing apparatus**	2.1 Breathing apparatus is donned in accordance with the organisation's procedures 2.2 Breathing apparatus is started and checked in accordance with organisational procedures 2.3 Breathing apparatus control procedures are followed in accordance with the organisation's procedures 2.4 Ancillary equipment required for the task is selected for use
3. **Operate breathing apparatus**	3.1 ***Hazards*** are identified, monitored and controlled in accordance with the organisation's procedures 3.2 ***Communication*** is established and maintained with members and other appropriate personnel throughout the activity 3.3 Activities are undertaken as a member of a team, demonstrating effective application of breathing apparatus in accordance with the organisation's procedures 3.4 ***Entrapment*** procedures are implemented in accordance with the organisation's procedures 3.5 Personal safety is maintained at all times
4. **Conclude operations**	4.1 Breathing apparatus set is closed down in accordance with organisational procedures 4.2 Breathing apparatus set is removed in accordance with the organisation's procedures 4.3 After use cleaning and maintenance of breathing apparatus is undertaken in accordance with the organisation's procedures 4.4 Equipment is made ready for operational use in accordance with organisational procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

Inspecting, donning, operating in, removal, cleaning, maintaining and returning to operational status of breathing apparatus

Required Knowledge

respiratory system, effects of irrespirable atmospheres on the body, protective equipment

characteristics, component parts, operation of compressed air breathing apparatus

operational testing, standard operating procedures and safe work practices when wearing breathing apparatus

operating breathing apparatus

use of the Distress Signal Unit

use of the breathing apparatus control equipment

use of procedures, personal lines and tallies

Evidence Guide

EVIDENCE GUIDE

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EVIDENCE GUIDE

Critical aspects for assessment and evidence required to demonstrate competency in this unit	It is essential for this unit that competence be demonstrated in accordance with AS/NZ 1715-1716: appropriate conduct of pre-donning tests correct donning of breathing apparatus operation of breathing apparatus movement in conditions or reduced visibility breathing apparatus emergency procedures organisation's procedures are followed correct removal of breathing apparatus return of breathing apparatus to operational status **Consistency in performance** Evidence should be gathered over a period of time in a range of actual or simulated workplace environments
Context of and specific resources for assessment	**Context of assessment** A combination of oral or written presentations, observations, on the job and/or in a range of simulated environments **Specific resources for assessment** access to a range of controlled or simulated scenarios Breathing Apparatus and associated equipment
Guidance information for assessment	Information that will assist or guide assessment will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Types of breathing apparatus must include	open circuit
and may also include	airline equipment escape sets
Types of irrespirable atmospheres must include	heated atmospheres asphyxiating atmosphere (oxygen deficient) (non-skin absorption) toxic or poisonous atmosphere smoke or suspended particles/fibres in atmosphere
Pre-use tests and checks must include	serviceability of components integrity of components cylinder pressure integrity of air flow system ancillary equipment
Breathing apparatus control equipment must include	control boards breathing apparatus set tallies entry control officer identification guideline and branch line tallies procedures personal lines
Breathing apparatus control must include	principles of BA Control organisation's procedures Stage 1 (one entry point) Stage 2 (multiple entry points) entry/exit control point entry/exit control officer timing device
Entrapment procedures	cease all strenuous activity

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RANGE STATEMENT

include	activate the distress signal unit remain calm relocate to safest available place call for assistance
Communications must include	distress signal unit portable radio
and may also include	communications sets signal lines hand signals
Hazards must include	fire failure to maintain a face seal exhaustion of air supply malfunction of equipment disorientation in smoke/darkness or confinement structural hazards and/or hazardous materials entrapment

Unit Sector(s)

Not applicable.

Corequisite Unit/s

Co-requisite Unit/s	Nil

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PUAFIR320 Render hazardous materials incidents safe

Modification History

Release	TP Version	Comments
2	PUA12 V2.1	Editorial changes.
1	PUA12 V2	New Unit. Replaces unit PUAFIR306B Render hazardous materials incidents safe.

Unit Descriptor

This unit covers the competency required to safely combat incidents involving hazardous materials.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

This unit applies to personnel who respond to an incident involving dangerous goods and hazardous substances and who have the skills and knowledge to identify and assess the hazards and risks and contribute to the development, implementation and review of the plan constructed to mitigate the risk they pose the public and environment.
‘Hazardous materials incident’ is a generic term used to refer to an incident involving any material such as dangerous goods and hazardous substances that poses an unreasonable risk to life, property and the environment.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

PUAFIR215 Prevent injury

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Recognise a hazardous materials incident	1.1 Pre-incident plans, site control and containment plan and directives from supervisor are identified and implemented.
	1.2 Incident is approached using care and caution, and a safe distance is maintained, in accordance with ***organisational procedures*** or ***guidelines,*** and/or advice from appropriate authorities.
	1.3 Hazardous materials are ***identified*** from a safe distance and using a ***range of sources*** and information is conveyed to supervisor in accordance with organisational guidelines.
2. Identify and assess hazards	2.1 Site hazards are identified in accordance with organisational guidelines.
	2.2 Hazards relating to the material/s and container/s are identified in accordance with organisational guidelines.
	2.3 Hazards are assessed in accordance with organisational guidelines and information is conveyed to supervisor.
3. Assist with the development of a plan for the mitigation of a HAZMAT incident	3.1 Incident objectives are identified in accordance with organisational policies.
	3.2 Risk control measures are identified and conveyed to supervisor.
	3.3 Entry objectives are identified and conveyed to supervisor.
	3.4 Entry plan is developed and documented in accordance with supervisor directives and organisational policies as required.
	3.5 Personal protective equipment (PPE) is considered in accordance with organisational policies.

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	3.6 Decontamination methods are identified in accordance with organisational policies.
	3.7 Requirement for ***detection and confinement/containment strategies*** are identified in accordance with organisational policies.
	3.8 ***Organisations required to assist with operations*** are identified.
4. Assist with the implementation of the plan for mitigation of a HAZMAT incident	4.1 Individual responsibilities within the organisation's action plan are identified and followed.
	4.2 Scene is isolated and secured, and ***hazard control zones*** and ***decontamination*** corridor are established according to organisational guidelines.
	4.3 Entry plan is implemented in accordance with organisational policies.
	4.4 Response equipment is applied in accordance with organisational policies.
	4.5 PPE is applied in accordance with organisational policies.
	4.6 Decontamination procedures are applied as required in accordance with organisational procedures.
	4.7 Requirement for detection and confinement/containment strategies are applied in accordance with organisational policies.
	4.8 Results are recorded and reported in accordance with organisational policies.
5. Assist with the review of the plan	5.1 Plan is reviewed and safety of entry team is monitored in accordance with organisational guidelines.
	5.2 Contamination incidents are recorded and reported to appropriate personnel in accordance with organisational guidelines.
	5.3 Entry, decontamination, detection and mitigation effectiveness is reviewed in accordance with organisational guidelines.

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Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

- don, operate in, decontaminate and remove personal protective clothing and equipment
- follow instructions and procedures
- interpret safety and hazard information
- use response equipment
- work as member of a team

Required Knowledge

- decontamination principles and procedures
- legislation relevant to the organisation
- methods of identifying hazardous materials
- mitigation (confinement/containment) techniques
- nature and properties of hazardous materials
- organisational policies and procedures
- PPE procedures
- principles of incident control
- scene control and site isolation

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessment must confirm the ability to:

- implement appropriate standard operating guidelines
- comply with relevant legislation
- demonstrate safe working practices
- identify hazardous materials
- assist in the establishment of action plan
- undertake mitigation techniques
- undertake decontamination procedures

Consistency in performance

Competency should be demonstrated over a period of time across a range of situations appropriate to organisational role.

Context of and specific resources for assessment

Context of assessment

Competency should be assessed in simulations or exercises and/or a series of tasks, which may involve setting scenarios to be completed either individually or as a member of a team.

Specific resources for assessment

Access is required to:

- relevant PPE, transport, communication
- response equipment

Method of assessment

This unit may be assessed with the following unit/s:

- PUAFIR308B Employ personal protection at a hazardous materials incident.

In a public safety environment assessment is usually conducted via direct observation in a training environment or in the workplace via subject matter supervision and/or mentoring, which is typically recorded in a competency workbook.

Assessment is completed using appropriately qualified assessors who select the most appropriate method of assessment.

Assessment may occur in an operational environment or in an agency-approved simulated work environment. Forms of assessment that are typically used include:

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- direct observation
- interviewing the candidate
- journals and workplace documentation
- third party reports from supervisors
- written or oral questions

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Range Statement

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.	
Organisational procedures and guidelines must include:	• government organisational procedures • organisational procedures • workplace health and safety practices and procedures
and may also include:	• Australian Standards and manufacturers' guidelines • company organisational procedures • external organisation assistance
Identification of hazardous materials must include:	• awareness of physical, chemical, biological and radiological (CBR) properties and behaviour of hazardous materials including signs and symptoms of CBR agents • chemical names • dangerous goods class labels • definition of hazardous materials, hazardous substance, dangerous goods, non-dangerous goods, toxic substance, and goods too dangerous to be transported • emergency information panels/emergency information signs • HAZMAT information/initial information/site manager • identification and location of dangerous goods class labels • occupancies including site/use/manufacture location and transport • packing groups • placarding • product names or trade names • proper shipping names • United Nations numbers • visual signs and material indicators • storage manifests • transport documents
and may also include:	• containers including transport and storage • environment • fixed site or community emergency response plans • identification of the material/s and their properties through onsite analytical testing

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	• physical, chemical, biological and radiological properties, behaviour and effects of hazardous materials including signs and symptoms of CBR agents • prediction of hazardous material behaviour, for example hazard prediction modelling • toxicology and entry routes of toxins
Range of sources must include	• CHEMDATA (HAZMAT Action Guides) • emergency procedures guides • emergency response guide books • HAZCHEM Emergency Action Codes • material safety data sheets (MSDSs) or safety data sheets (SDSs) • technical specialist
and may also include:	• electronic databases • European/Accord Dangereuse Routiers (ADR) hazard identification numbers • external organisation assistance • legislation/codes/standards – workplace health and safety, transport, storage and handling information, environment • National Fire Protection Association Codes • reference texts • site and community emergency response plans
Detection and confinement/containment strategies must include:	• defensive and offensive strategies for example: • over-packing including recovery drums or original containers • rescue • retention, absorbent materials and neutralisation of acids/bases • vapour suppression/blanketing and diking/diversion • ventilation and dispersion
and may also include:	• damming – using booms, pads, overflow and underflow dams • defensive and offensive strategies that may include: • external organisation assistance • field product transfer including gases/liquids using both closed and open loop methods • flaring • freeze (ice) patching • grounding and bonding • neutralisation of other materials, adsorption, gelation, emulsification and other chemical methods

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	• plugging and patching • venting or vent and burn
Organisations required to assist with operations may include:	• ambulance • companies • emergency services • government departments • local government • police
Hazard control zones must include:	• area of likely contamination (hot zone) • area of operations (warm zone) • controlled exits, entrances, refuges and emergency exits • criteria applied to determine the extent of hazardous areas • support zone (cold zone)
Decontamination must include:	• decontamination plan and corridors • emergency decontamination • emergency mass decontamination • technical decontamination
Decontamination may include:	• alternative water decontamination techniques • alternative wet decontamination techniques • detection strategies applied for decontamination • dry decontamination techniques • external organisation assistance

Unit Sector(s)

Not applicable.

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PUAFIR307B Monitor hazardous atmospheres

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

This unit covers competence in monitoring atmospheric conditions to measure contaminants, interpret readings, recommend action to take based on the interpretation, and the effects on humans exposed to hazardous atmospheres.

Application of the Unit

Application of the Unit

The application of this unit in the workplace - the environments, complexities and situations involved - will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

This text will be useful for the purposes of job descriptions, recruitment advice or job analysis; where possible, it will not be too job specific to allow other industries to import it into other Training Packages, where feasible.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

PUAFIR207B Operate breathing apparatus open circuit

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Prepare and plan for monitoring**	1.1 ***Equipment*** is selected, calibrated and used to take atmospheric readings in accordance with the manufacturer's specifications and the organisation's requirements
2. **Take precautions to safeguard health**	2.1 ***Safety information and procedures*** are accessed and applied throughout the work
	2.2 Appropriate personal protective clothing and equipment is selected and used
	2.3 Recommendations on actions to be taken are made based on atmospheric readings
3. **Take atmospheric readings**	3.1 Readings of contaminants are interpreted, recorded and analysed and/or compared with specifications and exposure limits
	3.2 Results are communicated in accordance with organisation's procedures
4. **Maintain equipment**	4.1 Monitoring equipment inspections and fault finding are carried out in accordance with manufacturers instructions
	4.2 Records of tests and results are maintained in accordance with the organisation's procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

Don, operate in, decontaminate and remove personal protective clothing and equipment

Analyse and communicate results of sampling

Required Knowledge

use and limitations of protective clothing and equipment

risk assessment

applicable exemptions for emergency services

purging agents

common chemical asphyxiants including: hydrocarbons, carbon dioxide, carbon monoxide, hydrogen cyanide, and hydrogen sulphide

common irritants and corrosives including: chlorine, ammonia and acid bases

common flammable gases including: acetylene, petroleum, methane, ethane, propane and butane

narcotics

(explosive range, upper and lower explosive limits)

exposure standards (time weighted average, short term exposure limits, peak limitation values, examination of toxic effect at the level of a range of flammable gases

conditions under which atmospheres become hazardous

organisational procedures for entering hazardous atmospheres

toxic effects on humans exposed to commonly encountered combustion gases

units of measurement used to express concentration of atmospheric contaminants (mg/cubic m. ppm, % v/v)

Evidence Guide

EVIDENCE GUIDE

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EVIDENCE GUIDE

Critical aspects for assessment and evidence required to demonstrate competency in this unit	It is essential in this unit that competence be demonstrated in: applying personal safety principles interpreting atmospheric conditions using atmospheric monitoring equipment recommending appropriate action maintaining monitoring equipment **Consistency in performance** Evidence should be gathered over a range of variables, all using different types of monitoring equipment
Context of and specific resources for assessment	**Context of assessment** A demonstration activity using workplaces/atmospheres with detectable but safe levels of contaminants should be used **Specific resources for assessment** For the demonstration of competence in this unit it will be necessary to provide a real life environment and/or simulations based on possible incidents. This should be done with access to a range of personal protective clothing and equipment, range of detection equipment as well as suitable simulation and/or sites. Underpinning knowledge may be assessed through written assignments, and observation at simulated incidents
Guidance information for assessment	Information that will assist or guide assessment will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Working environment may be	hazardous, unpredictable, subject to time pressure, chaotic and expose responders to risk, on land or water, by day or night
Safety information and procedures must include	relevant legislation, Australian Standards, codes of practice, manufacturer's instructions and organisational procedures
Procedures may include	safe working permit entry plan entry testing procedures appropriate rescue and first aid plans risk management measurement computer plume modelling
Response situations must include	confined spaces enclosed and partially enclosed spaces
and may also include	storage tanks, silos, pits, pipes, shafts, ducts, transport vehicles and ships obstructed entry/exit points low visibility or lack of illumination unsound or insecure structures single and multi agency response
Equipment must include	breathing apparatus, chemical protective clothing and equipment, portable instruments, radiation detectors, sampling tubes and pumps, oxygen level meter, carbon monoxide detector and combustible gas detectors
Workplace atmospheres may	include visible and invisible hazards include hazardous surfaces range from safe to unsafe

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RANGE STATEMENT

Incidents may include	all fire, Hazmat or rescue incidents

Unit Sector(s)

Not applicable.

Corequisite Unit/s

Co-requisite Unit/s	PUATEA001B Work in a team

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PUAFIR308B Employ personal protection at a hazardous materials incident

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

This unit covers the competency required to select, don and safely operate the appropriate personal protective clothing and equipment at a fire and at an incident involving dangerous goods and hazardous substances.

"Hazardous Materials" is a generic term used to refer to an incident involving dangerous goods and hazardous substances.

Application of the Unit

Application of the Unit

The application of this unit in the workplace - the environments, complexities and situations involved - will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

This text will be useful for the purposes of job descriptions, recruitment advice or job analysis; where possible, it will not be too job specific to allow other industries to import it into other Training Packages, where feasible.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite Unit/s	PUAFIR201B Prevent injury PUAFIR207B Operate breathing apparatus open circuit

Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Select and don protective clothing**	1.1 ***Protective clothing*** is selected and checked in accordance with identified hazards and the organisation's ***procedures*** 1.2 Protective clothing is donned and tested, where required, in accordance with the organisation's safe work practices
2. **Don and test protective equipment**	2.1 ***Protective equipment*** is checked, donned and tested prior to entry into fire or hazardous atmosphere to ensure it is operational and meets the organisation's occupational health and safety guidelines
3. **Work in area of operations**	3.1 Protective equipment is operated to minimise the risk of injury to the wearer and others from ***environmental health*** hazards in accordance with the organisation's procedures 3.2 Activities undertaken by the wearer in the area of operations are in accordance with the organisation's safe work practices and occupational health and safety guidelines
4. **Complete operations**	4.1 Decontamination procedures are undertaken, if required, upon leaving the area of operations in accordance with the organisation's procedures 4.2 Protective clothing and equipment are removed without damage and in accordance with safe work practices 4.3 Protective clothing and equipment are cleaned, maintained or serviced and stowed in accordance with the organisation's procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

don various types of protective clothing using agency procedures

work in protective clothing and equipment at incidents

test and maintain protective clothing

identify appropriate protective clothing for a range of hazardous materials

operate breathing apparatus

Required Knowledge

protective clothing and equipment worn at dangerous goods and hazardous substances incidents

limitations of protective clothing

donning procedures for protective clothing

agency procedures

decontaminating protective clothing and equipment procedures

maintenance procedures for protective clothing and equipment

protective clothing and equipment selection procedures

main routes of entry of toxins into the human body

local and systemic effects of industrial toxins

use and limitations of exposure standards

purpose, component parts and operation of breathing apparatus

maintenance and testing procedures for breathing apparatus

safe working practices

Evidence Guide

EVIDENCE GUIDE

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EVIDENCE GUIDE

Critical aspects for assessment and evidence required to demonstrate competency in this unit	It is essential that competence is demonstrated in the selection, donning, operation and maintenance of protective clothing and equipment using safe working practices and agency procedures Competency should be demonstrated in simulated environments before application on the job **Consistency in performance** Evidence should be gathered over a period of time in a range of actual or simulated workplace environments
Context of and specific resources for assessment	**Context of assessment** Competency for this unit may be demonstrated through simulations, exercises and on the job activities. Verbal or written questions may be used to support the gathering of evidence **Specific resources for assessment** For this unit access will be required to operational and cleaning equipment including the use of breathing apparatus
Guidance information for assessment	Information that will assist or guide assessment will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Personal protective clothing must include	turnout uniform and gloves chemical protective clothing, including splash suits and gas-tight suits
and may also include	thermal protective clothing limited use (disposable) multi-use (reusable)
Sources for identifying protective clothing and equipment requirements must include	Material Safety Data Sheets Emergency Procedure Guide - Transport electronic databases technical specialists relevant Australian standards, codes of practice organisational procedures
and may also include	emergency response guide books HAZCHEM Emergency Action Code HAZMAT Action Guide Emergency Procedure Guide - Transport electronic databases technical specialists
Procedures may include	organisational procedures training manual procedures OH&S guidelines
Sources of environmental health hazards in the workplace may include	light; heat; cold radiation; noise; vibration postural restrictions psychological stress
Testing procedures may include observance of	organisation testing procedures manufacturer's specifications

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RANGE STATEMENT

	codes of practice
Protective equipment must include	Breathing Apparatus Distress Signal Units (DSU) control boards
and may also include	air lines respirator
Operational procedures include	organisational procedures
and may also include	manufacturer's specifications OH&S guidelines codes of practice

Unit Sector(s)

Not applicable.

Corequisite Unit/s

Co-requisite Unit/s	PUAFIR306B Render hazardous materials incidents safe

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PUAFIR316 Identify, detect and monitor hazardous materials at an incident

Modification History

Release	TP Version	Comments
2	PUA12 V2.1	Editorial changes.
1	PUA12 V2	New unit.

Unit Descriptor

This unit covers the competency required to use specific equipment to detect airborne contaminants, liquids and solids.
This unit replaces PUAFIR307B Monitor hazardous atmospheres.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

This unit applies to personnel required to detect and identify contaminants at a hazardous materials incident using specialist equipment to identify the materials, assess the risk posed by the material identified and formulate a plan for their safe isolation and removal.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

PUAFIR207B Operate breathing apparatus open circuit

Employability Skills Information

This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess hazardous materials incident	1.1 Hazardous materials incident is approached using care and caution and a safe distance is maintained, in accordance with organisational ***procedures*** and/or advice from appropriate authorities
	1.2 Hazardous materials are ***identified*** from a safe distance and information is conveyed to the supervisor in accordance with organisational guidelines
	1.3 ***Information sources*** are accessed to determine the ***potential behaviour of hazardous materials***, in accordance with organisational guidelines
2. Identify and assess hazards at incident	2.1 Site ***hazards*** are identified in accordance with organisational guidelines.
	2.2 Specific hazards relating to the material/s and container/s are identified in accordance with organisational guidelines.
	2.3 Relevant hazard information is incorporated into the detection strategy.
	2.4 Hazards are assessed according to organisational guidelines and information is conveyed to supervisor.

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3. Develop an entry plan	3.1 Entry objectives are identified and conveyed to supervisor. 3.2 ***Entry plan*** is developed in accordance with supervisor directives and organisational policies. 3.3 Appropriate ***detection equipment*** is assessed and selected in accordance with organisational policies. 3.4 Personal protective equipment is considered in accordance with organisational policies and ***response situation.*** 3.5 ***Hazard control zones*** are established in accordance with organisational policies. 3.6 ***Decontamination methods*** are identified in accordance with organisational policies. 3.7 ***Organisations required to assist*** with the operation are determined and documented. 3.8 Detection strategy is documented in accordance with organisational policies.
4. Implement entry plan	4.1 Entry plan is implemented in accordance with organisational policies. 4.2 Detection equipment is prepared for use in accordance with organisational policies. 4.3 Detection equipment is used and maintained in accordance with organisational policies. 4.4 Results are recorded and reported in accordance with organisational policies. 4.5 Upon leaving the area of operations, decontamination procedures are undertaken when required, in accordance with organisational procedures.
5. Review entry plan	5.1 Entry plan is reviewed and safety of entry team is monitored in accordance with organisational guidelines. 5.2 Contamination incidents are recorded and reported to appropriate personnel in accordance with organisational guidelines. 5.3 Entry is reviewed in accordance with organisational guidelines.

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Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

- analyse and communicate detection results
- don, operate in, decontaminate and remove personal protective clothing and equipment
- interpret safety and hazard information
- use detection equipment

Required Knowledge

- asphyixants, which may include simple and chemical, flammable gases and liquids, corrosive gases and liquids
- conditions under which atmospheres become hazardous
- dynamics of toxicity, corrosivity, flammability
- flammable range, upper and lower flammable limits
- legislation relevant to the organisation
- odour threshold, exposure standards (time weighted average, short term exposure limits, peak limitation values), immediately dangerous to life and health (IDLH), and may include acute exposure guideline levels (AEGL)
- organisational policies and procedures
- physical chemistry concepts
- roles and responsibilities of agencies involved
- toxic effects on humans exposed to commonly encountered atmospheric contaminants such as reaction products or combustion products or variable oxygen concentrations
- units of measurement used to express concentration of atmospheric contaminants (mg/cubic m, ppm, %, v/v)

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessment must confirm the ability to:

- implement appropriate organisational standard operating guidelines
- comply with relevant legislation
- demonstrate safe working practices
- interpret hazardous conditions using detection equipment
- recommend appropriate action
- maintain monitoring equipment.

Consistency in performance

Competency should be demonstrated over a range of situations using different types of detection equipment.

Context of and specific resources for assessment

Context of assessment

Competency should be assessed in environments with detectable but safe levels of contaminants.

Specific resources for assessment

Access is required to:

- workplace and/or simulations based on possible incidents
- range of personal protective clothing and equipment
- range of detection equipment

Method of assessment

In a public safety environment assessment is usually conducted via direct observation in a training environment or in the workplace via subject matter supervision and/or mentoring, which is typically recorded in a competency workbook.

Assessment is completed using appropriately qualified assessors who select the most appropriate method of assessment.

Assessment may occur in an operational environment or in an agency-approved simulated work environment. Forms of assessment that are typically used include:

- direct observation
- interviewing the candidate
- journals and workplace documentation

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- third party reports from supervisors
- written or oral questions
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Range Statement

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.	
Procedures must include:	• government organisational procedures • organisational procedures including maintenance • work health and safety practices and procedures
and may also include:	• Australian Standards and manufacturer's guidelines • confined space procedures such as permit entry plan and entry testing procedures • dynamic risk assessment and planning procedures
Identification of hazardous materials must include:	• HAZMAT information • initial information • placarding • product/trade names • site manager • visual signs and material indicators
Information sources must include:	• chemdata • material safety data sheets (MSDSs) or safety data sheets (SDSs) • technical specialist
and may also include:	• electronic databases • environment • reference texts
Potential behaviour of hazardous materials must include:	• corrosivity • entry routes of toxins • flammability • toxicity • vapour density • vapour pressure
Hazards must include:	• chemical, biological, radiological, • physical, electrical, mechanical, thermal, visual, environment and dangerous situations • pressure vessels and lines
Entry plan may include:	• action levels • decontamination • detection strategy • personal protective equipment • safe approach entry and exit
Detection equipment must	• carbon monoxide detector

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include:	• flammable gas detector • hydrogen sulphide detector • indicator paper • oxygen detector
and may also include:	• air sampling apparatus • biological agent detectors • chemical agent monitors • colourimetric detection tubes • field sampling kit • flame ionisation detectors and flame photometric detectors • fourier transform infrared (ftir) spectrometers • hazard categorisation (hazcat) kits • ionisation mobility spectrometers • photoionisation detectors • radiation detectors • radiation dosimeters • radioisotope identifiers and neutron detectors • Raman spectrometers • remote air sampling equipment • sampling tubes • specific electrochemical detectors such as formaldehyde, chlorine
Response situations may include:	• confined spaces • ducts • hazardous waste sites • motor vehicle accidents • pits and shafts • Post fire situations • ships • simulated hazardous environments • storage tanks and silos • transport vehicles • unknown substance incidents • unsound or unsafe structures
Hazard control zones must include:	• area of likely contamination (hot zone) • area of operations (warm zone) • support zone (cold zone) • criteria applied to determine the extent of hazardous areas • controlled exits, entrances, refuges and emergency exits

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Decontamination methods must include:	• decontamination plan and corridors • types of decontamination as per organisational procedures
Organisations required to assist may include:	• ambulance • commercial organisations • emergency services • government departments • local government • police

Unit Sector(s)

Not applicable.

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PUASAR022A Participate in a rescue operation

Modification History

Release	TP version	Comments
2	PUA12 V1	Layout adjusted.
1	PUA00 V8.1	First release in TGA.

Unit Descriptor

This unit covers the competency required to participate in rescue operations as a member of a rescue team.
This unit underpins specialist rescue operations.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

The application of this unit in the workplace covers a wide range of rescue and environmental situations, which may include industrial, rural, bush and extreme environmental conditions.
The individual will work under supervision in a team but may be responsible for completing individual tasks relating to a rescue.
The unit is typically performed by personnel from emergency services and/or volunteer organisations.
Typically, people performing this role have completed induction or recruit training and are commencing work as a member of an operational team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

PUAEME001B Provide emergency care
OR
HLTFA201B Provide basic emergency life support

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare and respond to rescue	1.1 ***Rescue operation*** and task information is received. 1.2 ***Rescue equipment*** is identified and selected based on incident information, as directed by supervisor. 1.3 ***Personal protective equipment*** (***PPE***) is selected based on the nature of the rescue operation. 1.4 Any further details of the nature of the rescue are received en route. 1.5 Anticipated ***hazards*** and associated risks are discussed with rescue team members while on approach.
2. Contribute to a risk assessment at the scene	2.1 Rescue scene reconnaissance is conducted and hazards and risks identified at the scene are reported to supervisor. 2.2 ***Communication*** with other team members is maintained using appropriate ***techniques*** and terminology. 2.3 Hazards and ***environmental conditions*** are minimised and/or controlled as directed. 2.4 Health, safety and security procedures are followed in accordance with organisational policy and relevant legislation. 2.5 ***Personal capabilities*** and limitations are recognised and referred to supervisor. 2.6 Need for additional personnel and/or specialist equipment is reported to supervisor. 2.7 Casualties at scene are identified, reported to supervisor and action is taken as directed.
3. Perform rescue	3.1 Access to incident and/or casualties is gained using techniques and equipment in accordance with organisational procedures. 3.2 Rescue procedures are conducted in accordance with supervisor's instructions and organisational procedures. 3.3 Casualties are prepared for removal and extricated safely using appropriate equipment rescue techniques and procedures, under the direction of ***appropriately trained personnel.*** 3.4 Incident scene is constantly monitored for hazards to prevent injury to self and/or others and reports are provided to supervisor as required. 3.5 ***Hygiene precautions*** are implemented in accordance

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ELEMENT	PERFORMANCE CRITERIA
	with organisational requirements.
4. Conclude rescue operations	4.1 Equipment is recovered, cleaned and maintained to organisational standards and manufacturers' procedures, and is restowed to maintain operational readiness.
	4.2 Where identified, signs and symptoms of operational stress are recognised in self and others and reported to relevant personnel.
	4.3 Operational debriefing is participated in and ***operational documentation*** is completed to organisational standards.

Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

- identify and monitor hazards
- identify and use rescue equipment
- wear PPE in accordance with organisational requirements

Required Knowledge

- capabilities and limitations of rescue equipment
- casualty handling techniques
- environmental hazards
- manual handling techniques
- organisational policies and procedures (such as relevant legislation; operational, corporate and strategic plans; operational performance standards; operational policies and procedures; organisational personnel and occupational health and safety practices and guidelines; organisational quality standards; organisation's approach to environmental management and sustainability)
- personal hygiene
- procedures for reporting injuries and accidents
- relevant legislative and regulatory requirements
- ropes and knots
- safety precautions

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessment must confirm the ability to: • apply safe work practices in rescue operations • use equipment in accordance with organisational procedures • respond and react to instructions in a safe, correct and timely manner **Consistency in performance** Competency should be demonstrated over time in a range of actual and/or simulated workplace environments.
Context of and specific resources for assessment	**Context of assessment** Competency should be assessed in an industry-approved simulated and/or workplace environment involving rescue scenarios. **Specific resources for assessment** Access is required to: • PPE in accordance with organisational requirements • rescue equipment
Method of assessment	This unit may be assessed with the following unit: • PUATEA001B Work in a team In a public safety environment assessment is usually conducted via direct observation in a training environment or in the workplace via subject matter supervision and/or mentoring, which is typically recorded in a competency workbook. Assessment is completed using appropriately qualified assessors who select the most appropriate method of assessment. Assessment may occur in an operational environment or in an industry-approved simulated work environment. Forms of assessment that are typically used include: • direct observation • interviewing the candidate • journals and workplace documentation • third party reports from supervisors

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- written or oral questions

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Range Statement

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Rescue operation may include:	• confined spaces rescue • flood rescue • industrial rescue • road crash rescue • search and rescue • swift water rescue • trench rescue • vertical rescue

Rescue equipment may include:	• fire extinguishers
	• glass management kit
	• hand tools
	• ladders
	• lighting equipment
	• powered tools (battery, electric, fuel) such as:
	  • air bags
	  • chain saws
	  • cutting tools
	  • drills
	  • excavating tools
	  • hydraulic tools
	  • pneumatic equipment
	  • winches
	• rescue vehicles
	• ropes
	• tarpaulins

Personal protective equipment may include:	• appropriate protective clothing • boots • ear protection • helmets • infection protection • insect repellent • reflective vests • respiratory protection • safety glasses • safety gloves • sunscreen

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Hazards may include:	• adverse weather • convergence • dangerous goods and hazardous substances • difficult terrain • electricity • gas • heights • insufficient light • respiratory • rubble and debris • supplementary restraint systems • traffic • water • wild farm or domestic animals
Communication techniques may include:	• non-verbal • signals/signs • verbal • written

Environmental conditions may include:	• effects of weather:
	  • excess or lack of light
	  • extreme weather
	  • flood
	  • heat
	  • humidity
	  • mud slides
	• limited access
	• stability of rescue site

Personal capabilities may include:	• fatigue, stress, phobias • self assessed level of skill or competence
Appropriately trained personnel may include:	• ambulance crew • doctors • first aiders • nurses • paramedics
Hygiene precautions may include:	• as per operational procedures • avoiding contact with body fluids • washing hands • wearing appropriate protective clothing
Operational documentation may include:	• incident reports • legislation • notebooks, logbooks

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- organisational policies and procedures

Unit Sector(s)

Not applicable.

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PUASAR024A Undertake road crash rescue

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

This unit covers the competency required to gain access to and extricate entrapped casualty/s from vehicles travelling on the road such as cars, motorcycles, buses, trucks and semi-trailers while minimising the potential for further injury and preserving the integrity of evidence.

This unit requires the responder to access entrapped casualty/s using a range of techniques and to operate specialist equipment to undertake the rescue.

Application of the Unit

Application of the Unit

This unit applies to a member of a rescue team.

This unit may be customised to suit a range of road crash rescue incidents based on an organisational risk profile.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

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Employability Skills Information

Employability Skills	This unit contains employability skills.
Pre-requisite Unit/s	PUAEME002C Manage injuries at emergency incident OR HLTFA301B Apply first aid PUASAR022A Participate in a rescue operation

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Prepare and respond to road crash rescue**	1.1 Equipment is checked, serviced and **operationally ready** for use 1.2 ***Operation and task information*** is obtained and assessed about the ***type of collision*** 1.3 ***Rescue equipment*** is selected based on incident information 1.4 ***Personal protective equipment*** (***PPE***) is selected relevant to the nature of the rescue operation 1.5 Any further details of the nature of the rescue are received en route 1.6 Anticipated ***hazards*** and associated risks are discussed with rescue team members while on route

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ELEMENT	PERFORMANCE CRITERIA
2. **Establish and maintain rescue scene safety**	2.1 Road crash scene is assessed, hazards and risks are identified and appropriate control and ongoing monitoring processes are put in place 2.2 ***Scene management procedures*** are followed in accordance with organisational procedures and legal requirements 2.3 Safe working area is established and monitored to prevent injury to self and/or others 2.4 ***Vehicle/s are stabilised*** to prevent movement during access and removal, in accordance with organisational standards and procedures
3. **Manage casualties**	3.1 Hygiene precautions are maintained in accordance with organisational requirements 3.2 Casualties are assessed and stabilised to minimise further injury or discomfort during rescue operations 3.3 Nature of injuries/entrapment is ascertained to develop an ***extrication plan*** 3.4 Support is provided to medical personnel assisting with the treatment of the entrapped person/s as required
4. **Remove casualties from entrapment**	4.1 Access plans are determined in consultation with team leader and medical staff 4.2 ***Procedures*** are implemented to ***protect casualties*** from further injury or discomfort during access and removal 4.3 Access path is provided for removal of casualties using ***appropriate rescue techniques*** and equipment 4.4 Casualties are removed from vehicle using appropriate ***rescue removal techniques*** and rescue equipment 4.5 Removal of deceased person/s is undertaken under the direction of police

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ELEMENT	PERFORMANCE CRITERIA
5. **Conclude road crash rescue operations**	5.1 Scene is ***preserved*** for investigating officer/s 5.2 Equipment is recovered, cleaned and maintained in accordance with manufacturer's guidelines and organisational procedures 5.3 Decontamination procedures are followed in accordance with organisational procedures 5.4 Where identified, signs and symptoms of operational stress in self and others are recognised and reported to appropriate personnel 5.5 Operational debrief is participated in and ***operational documentation*** is completed to organisational standards

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

- apply emergency care practices
- apply relevant road crash rescue techniques
- apply scene management procedures
- undertake initial (ongoing) scene assessment
- userescue equipment in a range of situations
- wear appropriate PPE
- work in a multi-agency environment
- work in teams

Required Knowledge

- dangers associated with vehicle safety devices
- documentation requirements
- emergency care
- equipment characteristics and safe working loads in rescue operations
- establishment and maintenance of safe working areas and minimisation of hazards
- hazards and environmental threats
- infection control procedures
- legal requirements for responders
- methods of access
- need to return equipment to operational readiness after use
- operating procedures and organisational standards
- operational briefing and debriefing procedures
- organisational procedures for cleaning and discarding equipment in terms of environmental management and sustainability
- personal hygiene protocols
- reconnaissance processes
- relevant occupational health and safety principles and practices
- rescue equipment and manufacturer's operational guidelines
- rescue techniques relevant to a range of vehicles
- road crash rescue techniques
- road crash rescue concepts as described in the Australian Emergency Manual *Road Crash Rescue*
- roles and responsibilities of, and relationship with, other emergency service/s
- use of PPE
- vehicle construction and dangers in cutting vehicle parts and panels

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REQUIRED SKILLS AND KNOWLEDGE

Evidence Guide

Not applicable.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Operationally ready may include	Serviced as per manufacturers' recommendations and/or standard operating procedures
Operation and task information may include	Environmental and other hazards Location Other agencies responding Type and number of casualties/vehicles
Type of collision may include	Crushed vehicle Head-on Jack knife Load movement Multiple vehicle accidents Off-set (quarter oblique) Rear impact Side impact (t-bone) Vehicle roll-over Vehicle under-ride/over-ride
Rescue equipment may include	Fire extinguishers Glass management kit Hand tools Ladders Lighting equipment Powered tools (battery, electric, fuel) such as: • lifting bags • chain saws • cutting tools • drills • excavating tools • hydraulic tools • pneumatic equipment

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RANGE STATEMENT

	Rescue vehicles Ropes Stabilising equipment such as: • winches Tarpaulins
Personal protective equipment may include	Appropriate protective clothing Boots Ear protection Eye protection Gloves, boots Helmets Infection protection Respiratory protection
Hazards may include	Adverse weather and environmental condition After dark operations Bio-hazards Composite materials (carbon fibre and fibre glass) Difficult terrain Electricity Gas Hazardous materials/dangerous substances Other road users Supplementary restraint systems Traffic and bystanders Vehicle fuel Vehicle propulsion systems Vehicle glazing Wild farm or domestic animals Water and sewerage utilities
Scene management procedures may include	Access and egress Cordoning and screening scene

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RANGE STATEMENT

	Glass management Isolating vehicle electrical systems Managing bystanders and media Positioning of response vehicles Preserving evidence Removing hazards Searching for missing occupants Staging areas Traffic control and traffic plan
Vehicles may include	Buses Cars Farm vehicles Motorcycles Semi trailers Trucks
Stabilising vehicles may include	Chaining Chocking Jacking Packing Propping Ratchet straps Roping Tensioning (manual operated cable winch) Use of soft webbing (rated)
Extrication plan may include	Alternate entries Controlled release Immediate release
Procedures to protect casualties may include	Padding of sharp hazards (hard and soft protection) PPE for casualty (helmet, glasses, dust mask, ear protection) Shielding from debris, glass and tools

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RANGE STATEMENT

Appropriate rescue techniques may include	Door removal Folding down sill Foot well/front seat techniques: • pulling and pushing the column (fitted with uni-joints) • lifting the dash • dash roll • winching the dash • exposing the foot well Light commercial vehicle techniques: • van dash roll Overturned vehicle techniques: • inverted side removal • flapping the floor pan • inverted ramming (including inverted cross ramming techniques) Roof techniques: • create openings • forward roof flap • roof flap Side impact techniques: • cross ramming Side removal: • 'B' pillar rip • 'B' pillar removal Third door entry
Rescue removal techniques may include	Cervical collars Extrication devices Spinal immobilisation device Spine board (back board)
Preserving the incident scene must include	Disturbing only to gain access or make scene safe Not disturbing fatality scenes until police investigation activities are completed Preserving integrity of evidence

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RANGE STATEMENT

Operational documentation may include	Exposure records Incident field notes Incident report Organisation's reporting system Post operational report

Unit Sector(s)

Not applicable.

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PUASAR025A Undertake confined space rescue

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor	This unit covers the competency required to undertake rescue in ***confined spaces*** as a member of a single agency or multi-disciplinary team.

Application of the Unit

Not applicable.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Pre-requisite Unit/s	Nil - refer to the Application of the Unit
Application of the Unit	The application of this unit in the workplace covers a range of confined space rescue situations. The unit is typically performed by personnel from emergency services and/or volunteer organisations or organisations where confined space work is undertaken. In the context of the Fire Sector the following units are pre-requisite units: • PUASAR022A Participate in a rescue operation • PUAFIR307B Monitor hazardous atmospheres.

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Prepare for *confined space* rescue operation**	1.1 Operation and task information is obtained from a variety of sources and analysed, and team roles are confirmed 1.2 Appropriate ***rescue equipment*** is identified and selected based on incident information as directed by supervisor 1.3 ***Personal protective equipment*** is selected relevant to the nature of the confined space rescue operation 1.4 Any further details of the nature of the rescue are received en route 1.5 Anticipated hazards and associated risks are discussed with rescue team members whilst on route

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ELEMENT	PERFORMANCE CRITERIA
2. **Assess and manage confined space/trench rescue**	2.1 Confined space is assessed, hazards and risks are identified, and appropriate control and ongoing monitoring processes are put in place 2.2 Physical features of confined space rescue scene are assessed before deploying rescue resources 2.3 Rescue is managed to control access and to maintain a safe and effective operational environment 2.4 ***Situational and environmental hazards*** are assessed, minimised and controlled 2.5 Communication with other ***personnel*** on site is established and maintained
3. **Determine location and condition of casualties**	3.1 Assessment of incident scene is undertaken to determine possible location of casualties 3.2 Appropriate equipment is used to assist in the location of casualties 3.3 Evidence of location of casualties within confined space is collected and reported 3.4 Condition of casualties and nature of entrapment is ascertained where possible 3.5 Hygiene procedures are applied in accordance with organisational procedures
4. **Gain entry to confined space**	4.1 Entry permit is located and relevant information is obtained if available 4.2 Atmosphere is monitored in accordance with AS 2865-2009 Confined spaces 4.3 Appropriate ventilation procedures are implemented, where required 4.4 Appropriate respiratory protection is used in irrespirable atmospheres, where required 4.5 Techniques and equipment are employed to access the casualty 4.6 Located casualties are treated in consultation with medical personnel and in accordance with organisational policies

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ELEMENT	PERFORMANCE CRITERIA
5. **Remove casualties**	5.1 Casualties are removed in accordance with organisational procedures 5.2 Appropriate actions are taken to ***preserve the incident scene*** and to ***collect evidence***, where possible
6. **Conclude rescue operations**	6.1 Equipment is recovered, cleaned and serviced according to organisational standards and manufacturer's guidelines 6.2 Signs and symptoms of operational stress are recognised and promptly reported 6.3 ***Operational documentation*** is completed to organisational standards

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

- operate atmospheric monitoring equipment
- operate isolation systems
- operate lifting equipment
- operate lowering and hauling systems
- operate self contained breathing apparatus and airline equipment
- operate ventilation equipment

Required Knowledge

- Australian Standard (AS) 2865-2009 Confined spaces
- lock, tag out and isolation procedures
- organisational procedures for cleaning and discarding equipment in terms of environmental management and sustainability
- potential occupational hazards and control measures
- procedures for atmospheric monitoring
- purging and ventilation in accordance with national standards
- selection, use and maintenance of respiratory devices
- use of ropes and knots for accessing confined space

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessment must confirm the ability to: • extricate casualty minimising further injury to casualty, injury to self and others. Consistency in performance Competency should be demonstrated over time in a range of actual and/or simulated workplace environments.
Context of and specific resources for assessment	Context of assessment Competency should be assessed in an industry-approved simulated and/or workplace environment involving confined space rescues using a range of equipment. Specific resources for assessment Access is required to: • appropriate venue • organisational resource equipment • personnel for team-based activities • resources as specified in AS 2865-2009 Confined spaces.

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EVIDENCE GUIDE

Method of assessment	In a public safety environment assessment is usually conducted via direct observation in a training environment or in the workplace via subject matter supervision and/or mentoring, which is typically recorded in a competency workbook. Assessment is completed using appropriately qualified assessors who select the most appropriate method of assessment. Assessment may occur in an operational environment or in an industry-approved simulated work environment. Forms of assessment that are typically used include: • direct observation • interviewing the candidate • journals and workplace documentation • third party reports from supervisors • written or oral questions.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Confined space is defined in	AS 2865-2009 Confined spaces
Rescue equipment may include	Airline equipment Atmospheric monitoring equipment Communications Escape sets and harnesses Hauling systems Life rescue line Litters/stretchers Isolation equipment Ropes/tapes Self-contained breathing apparatus/airline Tripods/edge management Ventilation and purging equipment
Personal protective equipment may include	Airlines Atmospheric monitoring equipment Chemical splash suit/fully encapsulated gas-tight suits Gloves Hearing protection aids Helmets Safety glasses Self-contained breathing apparatus
Situational or environmental hazards may include	Atmospheric contaminants (such as hydrogen sulphide) Dangerous goods or hazardous substance Engulfment Falls from heights or into depths Heat exhaustion or hypothermia Oxygen enrichment

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RANGE STATEMENT

	Oxygen deficiency Methane and carbon dioxide Moving machinery either electrical or mechanical Sewers and stormwater canals Stored energy Swift water
Personnel may include	Agency support Emergency services workers Local/state/territory government authorities Onsite staff Specialist advisors and safety authorities
Preserving the incident scene may include	Preserving evidence and related legal requirements
Collecting evidence may include	Entry permit Information received from bystanders Permit to work Witnesses and emergency services personnel
Operational documentation may include	Atmospheric monitoring procedures Entry control procedures Entry permits Equipment and rope logs Exposure records Tally boards

Unit Sector(s)

Not applicable.

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PUASAR027A Undertake land search rescue

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor	This unit covers the competency required to search for and locate lost persons and/or items as a member of a land search team.

Application of the Unit

Not applicable.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability Skills	This unit contains employability skills.
Pre-requisite Unit/s	Nil - refer to the Application of the Unit
Application of the Unit	This unit applies to individuals who are required to perform a land search as a member of a team under the direction of team leader in a range of environments and conditions. In the context of the Fire Sector the following unit is a pre-requisite: • PUAFIR201B Prevent injury.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Prepare for land search**	1.1 ***Operation and task information*** is obtained and assessed and ***safety briefing*** is received 1.2 ***Incident information*** is used to determine ***personal equipment*** needed for ***search operation*** appropriate to search terrain 1.3 ***Search equipment*** is checked and packed for use appropriate for the expected ***terrain*** and ***conditions***
2. **Participate in search**	2.1 ***Specified team roles*** and functions for search operations are carried out and safety briefing is conducted 2.2 Search techniques are maintained, as specified by search coordinator 2.3 Search boundaries are marked in line with task requirements 2.4 ***Observation skills*** are applied and any clues to locate persons or objects are reported immediately in accordance with organisational procedures 2.5 ***Communication*** is maintained within the team 2.6 Personal capabilities and limitations are recognised and referred to supervisor

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ELEMENT	PERFORMANCE CRITERIA
3. **Maintain search safety**	3.1 ***Survival techniques*** are applied where required 3.2 Search safety procedures are implemented in accordance with organisational policies and procedures 3.3 Lost searcher procedures are implemented if required
4. **Preserve scene**	4.1 Supervisor is immediately advised of located persons or findings in accordance with organisational procedures 4.2 Initial preservation procedures are implemented to maintain the integrity of evidence 4.3 Initial scene preservation is conducted in line with the organisational requirements
5. **Complete stand down procedures**	5.1 Search equipment is recovered, cleaned and maintained in accordance with manufacturer's guidelines and organisational procedures 5.2 Operational debriefing is participated in and ***operational documentation*** is completed to organisational standards 5.3 ***Symptoms of operational stress*** are recognised and reported 5.4 Decontamination procedures are followed in accordance with organisational procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

- apply survival techniques
- deal appropriately with clues and location of objects and/or causalities
- implement lost searcher procedures
- implement spacing and boundary marking procedures
- maintain search information
- observation skills
- wear appropriate personal protective equipment (PPE) correctly
- work in a team

Required Knowledge

- local documentation requirements
- local hazards and environmental threats
- local operating procedures
- local operational briefing and debriefing procedures
- lost searcher procedures
- organisational policies and procedures (such as relevant legislation; operational, corporate and strategic plans; operational performance standards; operational policies and procedures; organisational personnel and occupational health and safety practices and guidelines; organisational quality standards; organisation's approach to environmental management and sustainability)
- procedures to locate person or object
- recall procedures
- relevant occupational health and safety principles and practices
- relevant state/territory search management arrangements
- requirements to preserve a crime scene and the preservation of evidence
- signs and symptoms of operational stress

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessment must confirm the ability to: • comply with search orders and organisational requirements • observe safety of self and others at all times during the search. **Consistency in performance** Competency should be demonstrated over time in a range of actual and/or simulated workplace environments.
Context of and specific resources for assessment	**Context of assessment** Competency should be assessed in an industry-approved simulated and/or workplace environment involving land search rescues using a range of equipment. **Specific resources for assessment** Access is required to: • appropriate environment to conduct the search operation • other organisations.

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EVIDENCE GUIDE

Method of assessment	In a public safety environment assessment is usually conducted via direct observation in a training environment or in the workplace via subject matter supervision and/or mentoring, which is typically recorded in a competency workbook. Assessment is completed using appropriately qualified assessors who select the most appropriate method of assessment. Assessment may occur in an operational environment or in an industry-approved simulated work environment. Forms of assessment that are typically used include: • direct observation • interviewing the candidate • journals and workplace documentation • third party reports from supervisors • written or oral questions.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Operation and task information may include	Access and egress routes Command, control and coordination arrangements Location Magnitude and type of incident Number and type of casualties Other organisations Potential hazards Weather conditions and forecasts
Safety briefing may include	Appropriate PPE Care for other team members Changing light Fatigue management Identified hazards and risks Resupply Risks Situational awareness Own limitations Weather
Incident information may include	Access and egress routes Command, control and co-ordination arrangements Emergency rendezvous points Number, nature and description of persons or objects that are the focus of the search Operating area Potential hazards Terrain and environmental information Time constraints Weather forecast

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RANGE STATEMENT

Personal equipment may include	Food Notebook and pencil Overnight sleeping equipment Personal first aid equipment Personal hygiene items PPE, especially wet weather gear, cold weather clothing, sun protection Water
Search operations may include	Operations are normally conducted in support of the police Searching for missing persons, objects or evidence Searching, most commonly, on foot - although searches may be undertaken from vehicles or on horseback, skis and snowshoes
Equipment may include	Boundary marking tapes Compass or other positioning equipment Map Radio communications equipment
Terrain may include	Forests Grassland Sand Snow Steep rock areas • Urban areas
Conditions may include	Hazardous environmental conditions including: • adverse weather • after dark operations • dangerous flora and fauna • difficult terrain • time pressure Operating as part of a multi-agency response Urban or rural environments
Specified team roles may	Be determined based on the selected search technique

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RANGE STATEMENT

	(as per national land search operations manual) such as: • line search • feature search • track search
Observation skills may include	Day vision skills Night vision skills
Communication may include	Calming and reassuring a casualty Feedback of information Modes of communication as per organisational requirements
Survival techniques may include	Constructing fires Constructing temporary shelters Conserving water, food and energy Locating shelter Obtaining water Skills relevant to the local areas (such as cold, heat, terrain and forest)
Operational documentation may include	Electronic recording devices Notes, sketches of findings or other relevant information required for potential coronial or other legal proceedings photos
Symptoms of operational stress may include	Fatigue Headaches Illness Indecision Intolerance Lack of focus Nausea

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Unit Sector(s)

Not applicable.

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PUASAR032A Undertake vertical rescue

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor	This unit covers the competency required to undertake vertical rescue in a range of emergency situations in natural and man-made environments.

Application of the Unit

Application of the Unit	The application of this unit in the workplace covers a range of vertical rescue situations. The unit is typically performed by personnel from emergency services and/or volunteer organisations.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Pre-requisite Unit/s	PUASAR022A Participate in a rescue operation

Employability Skills Information

Employability Skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Prepare and respond to vertical rescue**	1.1 ***Operation and task information*** is obtained from a variety of ***sources*** and analysed, and team roles are confirmed 1.2 ***Vertical rescue equipment*** is selected based on incident information and is checked to ensure it is ready for use 1.3 Personal protective equipment for vertical rescue is selected
2. **Assess scene**	2.1 Appropriate actions are taken to preserve incident scene 2.2 Scene reconnaissance is conducted and results are reported 2.3 ***Scene management procedures*** are followed in accordance with vertical rescue procedures and legal requirements 2.4 ***Physical and environmental features*** of scene are assessed before deploying rescue resources 2.5 Risk assessment is conducted and communicated as per organisational procedures 2.6 Access is controlled and a safe and effective ***operational environment*** is maintained 2.7 Communication with other personnel on site is established and maintained including team and safety briefings relevant to task 2.8 Location and condition of casualty is determined

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ELEMENT	PERFORMANCE CRITERIA
3. **Establish vertical rescue system**	3.1 Rescue ***system*** is constructed according to type of incident 3.2 Anchors are established and monitored 3.3 Equipment is prepared and techniques are used in accordance with manufacturer's guidelines and organisational procedures
4. **Perform vertical rescue**	4.1 Hygiene precautions are maintained in accordance with organisational requirements 4.2 Access is gained to casualties or trapped persons using organisationally approved techniques and equipment 4.3 Casualties or trapped persons are secured and prepared for removal in consultation with medical personnel 4.4 Casualties are removed using ***vertical rescue techniques*** and equipment while preventing further injury 4.5 Scene is ***preserved*** for investigating officers
5. **Terminate vertical rescue operations**	5.1 Equipment is recovered, cleaned and serviced in accordance with manufacturer's guidelines and organisational procedures 5.2 Where identified, signs and symptoms of operational stress are recognised and reported 5.3 Operational debrief is conducted and ***operational documentation*** is completed to organisational standards 5.4 Decontamination procedures are followed in accordance with organisational procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

- check, service and maintain vertical rescue equipment
- control infection
- escort stretchers in raising and lowering operations
- establish, maintain, monitor and use:
- ascent and descent systems
- safety systems
- stretcher rigging
- implement safe and effective scene management procedures
- manage edge protection
- treat and package casualties
- undertake scene assessment and reporting
- use personal protective and rescue equipment within its safe work limitations
- wear appropriate personal protective and rescue equipment correctly
- work in a team

Required Knowledge

- breaking strains
- casualty assessment and packaging
- emergency management and interagency arrangements
- equipment characteristics
- operation of high lines (span line, Tyrolean etc.)
- operational briefing and debriefing procedures
- organisational procedures for cleaning and discarding equipment in terms of environmental management and sustainability
- organisational procedures for operating vertical rescue equipment
- personal hygiene protocols
- principles of suspension trauma
- reconnaissance techniques
- relevant legislation
- relevant occupational health and safety (OH&S) principles and practices
- safe working loads of equipment
- safety factors and safe working loads
- signs and symptoms of operational stress
- vertical rescue concepts and practices
- voice, whistle and other communication systems

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REQUIRED SKILLS AND KNOWLEDGE

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessment must confirm the ability to: • establish safe systems to gain access to and recover casualties • extricate casualty minimising further injury or discomfort while conducting rescue operation • apply safe work practices. **Consistency in performance** Competency should be demonstrated over time in a range of actual and/or simulated workplace environments.
Context of and specific resources for assessment	**Context of assessment** Competency should be assessed in an industry-approved simulated and/or workplace environment involving vertical rescues using a range of equipment. **Specific resources for assessment** Access is required to: • an appropriate venue for vertical rescue activities • organisational vertical rescue equipment and personnel for team-based activities.

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EVIDENCE GUIDE

Method of assessment	This unit may be assessed with the following unit: • PUATEA002B Work autonomously. In a public safety environment assessment is usually conducted via direct observation in a training environment or in the workplace via subject matter supervision and/or mentoring, which is typically recorded in a competency workbook. Assessment is completed using appropriately qualified assessors who select the most appropriate method of assessment. Assessment may occur in an operational environment or in an industry-approved simulated work environment. Forms of assessment that are typically used include: • direct observation • interviewing the candidate • journals and workplace documentation • third party reports from supervisors • written or oral questions.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Operation and task information may include	Access and egress routes Clearly defining team roles (team leader, safety officer, technicians) Command, control and coordination arrangements Location Magnitude and type of incident Number and type of casualties Other organisations Potential hazards Weather conditions and forecasts
Sources may include	Pager People on scene Public Other organisations
Vertical rescue equipment may include	Anchors Ascending and descending devices Binoculars Edge management devices Edge protection Karabiners Lighting and generator Pulleys Rescue rope to AS 4142.3-1993 Fibre ropes - Man-made fibre rope for static life rescue lines; AS 4143.6-1996 Methods of test for fibre ropes - Resistance to abrasion; AS/NZS 1891 Industrial fall-arrest systems and devices Slings Specialist communications equipment

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RANGE STATEMENT

	Stretchers Tapes
Scene management procedures may include	Establishing and monitoring safety zones Establishing barriers and perimeter access controls Liaising with the media Managing bystanders and media Preserving the crime scene
Preserving the incident scene must include	Disturbing only to gain access or make scene safe Not disturbing fatality scenes until police investigation activities are completed Preserving integrity of evidence
Physical and environmental features may include	Air quality Anchor points Cold rain Clearances Exhaust or steam outlets Exposed or hazardous electrical conductors Exposed unprotected edges Fuels and chemicals Greasy or oily surfaces Ground stability High winds Hot and/or humid conditions Hot surfaces Irrespirable atmospheres Loud noises Low light environments Moving machinery Physical features such as slopes: • loose surfaces • sheer face • overhangs

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RANGE STATEMENT

	Snow and ice Swift water Tides/waves/surf movements Unstable structures
Operational environments may include	Man-made such as tower structures, mines and shafts Natural such as trees, cliffs, caves
Systems may include	Edge management Hauling High line or Tyrolean Lowering
Vertical rescue techniques will be determined by	Organisational policy and procedures Type of vertical rescue system adopted
Operational documentation may include	Equipment running logs Notes Organisational procedures and related legal requirements Sketches Vehicle logs

Unit Sector(s)

Not applicable.

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PUATEA001B Work in a team

Modification History

Release	TP version	Comments
2	PUA12 V1	Layout adjusted. Application revised.
1	PUA00 V8.1	First release in TGA.

Unit Descriptor

This unit covers competency in working with others and making a positive contribution to the effectiveness and efficiency of a team in a work environment when predominantly under direct supervision. Limited responsibility towards others is required.

Application of the Unit

This unit applies to all workers working in the Public Safety industry, but is particularly relevant to new workers in assisting integration with the organisational team culture of the agency.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Contribute to team activities	1.1 Roles and responsibilities of team members are recognised. 1.2 Contribution is made to identifying team goals and objectives. 1.3 ***Activities*** are completed to required standard within timeframe and in accordance with ***organisation's policies and procedures.*** 1.4 ***Assistance*** in the completion of tasks is requested from other team members where appropriate. 1.5 Team members are assisted to ensure efficient and safe completion of tasks in accordance with organisation's policies and procedures. 1.6 Participation by team members is encouraged and acknowledged. 1.7 Changes in allocated role and responsibilities are implemented. 1.8 Team meetings are attended regularly and punctually.
2. Share knowledge and information	2.1 Information relevant to work is communicated effectively with team members to enable efficient completion of tasks in accordance with the organisation's policies and procedures. 2.2 Knowledge and skills are shared between team members.
3. Give and receive support to/from team members	3.1 ***Feedback***/assistance is given to other team members in an appropriate manner. 3.2 Team members are supported in achieving workplace goals. 3.3 Feedback from other team members is acted upon appropriately.

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Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

- encouraging others/team members
- following instructions
- interpersonal skills
- listening and using a variety of communication skills
- providing suggestions and information
- reporting information

Required Knowledge

- composition of workplace teams and roles and responsibilities of team members
- non operational and operational communication processes
- techniques for giving and receiving feedback in a constructive manner
- techniques for supporting others

Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit	It is essential for this unit that competence be demonstrated in the effective communication and contribution to the achievement of tasks consistent with agreed goals. **Consistency in performance** Evidence will need to be gathered over time in a variety of team situations including regular work group and occasional or one-off work group.
Context of and specific resources for assessment	**Context of assessment** On the job or in a simulated workplace environment. **Specific resources for assessment** No special requirements.

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Range Statement

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Teams comprise	• two or more people working towards a shared purpose
Appropriate situation to request assistance may include:	• difficulty meeting timelines • to comply with occupational health and safety requirements • unsure of best method to complete task • to maximise efficiency
Assisting other team members may include:	• own tasks completed • to comply with occupational health and safety requirements • assistance requested • actions of others do not comply with requirements • other team member appears to be having difficulty completing task
Contribute to workplace goals may include:	• completion of task • achievement of new competencies • development of new skills • attainment of new knowledge • personal development
Activities may include:	• working with other members of a team in a work environment or responding in a combat or support role to natural emergencies technological/industrial emergencies • civil/political emergencies and non emergency operations including community events • public relations – activities • sporting events • parades • festivals
Conditions under which this competency may be required include	• hazardous conditions eg adverse weather • after dark operations • difficult terrain • time pressure • varying time frames from immediate/short term to long term response operations • varying access to equipment/resources necessitating the use of improvised techniques • single or multi organisation responses

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	• dealing with human behaviours that result from emergency situations • non-emergency operations and events eg training and community education
Appropriate feedback on performance may include:	• acknowledging initiative • aptitude • ideas • performance and assistance • providing constructive criticism
Organisation's policy and procedures may vary between sectors and organisations and may include:	• legislation relevant to the operation/incident/response • legislation relevant to the organisation • operational • corporate and strategic plans • operational procedures • operational performance standards • organisation's personnel practices • policy and procedures • organisation's quality standards • organisation's approach to environmental management and sustainability
Communication processes may include:	• established organisation's procedures for recording and reporting • the use of logs • notebooks • pagers • radios and telephones • team members may be geographically dispersed and require communication systems and technology to remain in contact

Unit Sector(s)

Not applicable.

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SUGPOTB2A Operate a turbine

Modification History

Not applicable.

Unit Descriptor

Unit descriptor

This is a Specialist unit. It covers the skills and knowledge required to for continuous and short term operation of a turbine and for start up and shut down after a prolonged break.

This unit is based on the following Worksafe Australia Standards for Users and Operators of Industrial Equipment - NOHSC 1006 (2001):- Start steam turbine, Operate and monitor turbine, and Shut down turbine. Turbine operators holding a ticket from the relevant state regulatory authority will be granted equivalence in this unit SUGPOTB2A Operate a turbine for the purpose of issuing a qualification.

Application of the Unit

Not applicable.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

Not applicable.

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Elements and Performance Criteria

Element	Performance criteria
1. Prepare the turbine for operation	1.1 Pre-operational checks are conducted
	1.2 Health and safety hazards / maintenance requirements are identified and reported to appropriate personnel according to workplace reporting procedures
2. Start and monitor turbine operation	2.1 The turbine is started and brought on line safely according to workplace procedures and manufacturer's recommendations
	2.2 Plant is operated within limits of manufacturer's specifications to meet workplace requirements
	2.3 Equipment is monitored to confirm operating condition
	2.4 The workplace meets housekeeping standards
3. Analyse and respond to abnormal performance	3.1 Operating data and plant operating conditions are analysed to identify causes of abnormal performance
	3.2 Corrective action is taken in accordance with workplace procedures in response to Hazards and abnormal plant performance
	3.3 Emergency procedures are implemented as required according to workplace procedures and manufacturer's recommendations
4. Handover turbine operations	4.1 Workplace records are maintained in accordance with statutory requirements and workplace procedures
	4.2 Handover is carried out according to workplace procedure
	4.3 Turbine operators are aware of turbine status and related equipment at completion of handover
5. Shutdown the turbine	5.1 The turbine is operationally shut down according to workplace procedures and manufacturer's recommendations
	5.2 Valves and fittings are removed in preparation for maintenance as required
	5.3 The turbine is stored in shut down mode
	5.4 Maintenance requirements are identified and reported according to workplace reporting procedure

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Required Skills and Knowledge

Not applicable.

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Evidence Guide

Evidence guide

The assessment process must address all of the following items of evidence.

Ability to:

1. Access workplace information on operating requirements
2. Select, fit and use personal protective clothing and/or equipment
3. Handle chemicals safely. This includes following correct handling and storage procedures and use of appropriate protective clothing and equipment
4. Identify and report hazards and potential hazards in the work area
5. Confirm status of turbine and related services including availability of steam
6. Conduct pre-start checks. This typically include checking:

- cooling water supply
- overspeed trip
- emergency stop
- operation and position of valves, fittings, steam traps and steam line purge systems
- lubrication system
- drainage system
- steam quality and pressure
- heat input
- free rotation of turbine
- reticulation line pressure and system warm up

7. Liaise with other work areas to advise of turbine status
8. Demonstrate set up and start up procedures in both manual and automatic modes and for both a hot start and cold start
9. Monitor turbine operation. This typically includes monitoring:

- bearing temperature
- pressures
- speeds
- glands
- water filters
- oil levels
- equipment condition including noise and vibration
- steam reticulation line pressure
- lubrication system
- condenser operation (where fitted)

10. Take corrective action in response to abnormal or unacceptable performance
11. Report and/or record corrective action as required
12. Demonstrate shift handover procedure and confirm that replacement operators are aware of equipment status and operating requirements prior to completing handover
13. Demonstrate procedure to take turbine off line
14. Demonstrate procedure to prepare the turbine for a prolonged shut down. This includes removal of valves and fittings
15. Demonstrate emergency trip procedure and related re-start
16. Record operating information
17. Maintain work area to meet housekeeping standards

May include ability to:

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18. Use process control systems

Knowledge of:

19. Relevant state OHS legislation, standards and codes of practice relating to work responsibilities
20. Safety features of the turbines. These include relief and over-speed trip valves
21. Safe work procedures including awareness of health and safety hazards related to turbine operation and associated control measures. Hazards typically include handling chemicals, working around hot surfaces, working around moving equipment, manual handling, fuel and steam leaks.
22. Hierarchy of hazard control measures
23. Duty of care of the turbine operator
24. Purpose and limitations of protective clothing and equipment
25. Purpose and basic principles of turbines. This includes properties of steam
26. Turbine system layout and steam cycle
27. Relationship to other processes. This includes suppliers and users of steam across the site
28. The effect of steam quality on turbine operation
29. The effect of low steam pressure on turbine operation
30. Methods used to render equipment safe to inspect, maintain and/or clean including lock-out, tag-out and isolation procedures
31. Equipment purpose and basic operating principles of turbine and related equipment
32. Operating requirements and parameters
33. Procedures for responding to emergency situations. This includes safe operational shutdown procedure
34. Handover and long term shut down and storage procedures
35. Environmental issues and controls
36. Housekeeping standards for the work area
37. Reporting and recording systems. This includes both statutory and workplace requirements

May include knowledge of:

38. Basic operating principles of process control where relevant. This includes the relationship between control panels and systems and the physical equipment

Relationship with other standards

Pre-requisite units

There are no pre-requisite units for this competency standard.

Co-assessment of related units

Other units of competency relevant to the work role should be assessed in conjunction with this unit. This may include:

- SUGZPCI2A Operate a process control interface

Resources required for assessment

Assessment must occur in a real or simulated workplace where the assessee has access to:

- Turbine and related equipment
- Relevant codes and standards
- Operating procedures and related advice on equipment operation
- Personal protective clothing and equipment
- Communication systems and equipment

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- Housekeeping standards and procedures
- Workplace information recording systems, requirements and procedures

Assessment requirements
For assessment advice where the turbine operation is not a certified occupation, refer to the Assessment Guidelines for this Training Package. Where turbine operation is a certificated occupation, refer to the appropriate NOHSC competency standards, available from National Occupational Health and Safety Commission.

Range Statement

Range statement
The range statement indicates the context for demonstrating competence. This statement is a guide and unless otherwise indicated, items may or may not apply as required by the work context.

- Work is carried out in accordance with company policies and procedures, licensing requirements, manufacturer's recommendations, legislative requirements, codes of practice and industrial awards and agreements. Codes of practice include the Sugar Milling Operations Industry Code of Practice
- Workplace information can include Standard Operating Procedures (SOPs) and manufacturer's specifications
- Confirming equipment status involves conducting relevant pre-start checks, confirming that cleaning standards are met, all safety guards and manholes are in place and equipment is operational
- Turbines and related equipment may include turbines and pass-out turbines, condensers, oil coolers, vacuum pumps and filters
- Operation and monitoring of equipment and processes typically requires the use of control panels and systems
- Services may include steam, water, mill and instrumentation air and power
- Tests may include trip tests
- Work may require the ability to work within a team environment
- Information systems may be print or instrumentation based
-

Unit Sector(s)

Not applicable.

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TAEASS301B Contribute to assessment

Modification History

Version	Comments
TAEASS301B	Released with *TAE10 Training and Education Training Package version 2.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to contribute to the assessment process.

Application of the Unit

This unit typically applies to a person with technical or vocational expertise who is in a supervisory or mentoring/coaching work role and for whom collecting evidence for assessment is an adjunct to principal work responsibilities.
This unit is performed under the following conditions:

- the necessary assessment tools and assessment resources to guide the evidence collection process have been provided
- any adjustments to tools are determined by the qualified assessor (as defined by the Australian Quality Training Framework and the assessor requirements of the relevant training package), who provides guidance and supervision.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency .	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Clarify role and responsibilities in the assessment process	1.1 Discuss and confirm ***purpose of assessment*** with ***relevant people*** 1.2 Discuss and confirm ***benchmarks for assessment*** with qualified assessor 1.3 Access, read and clarify ***assessment plan*** with qualified assessor 1.4 Discuss and agree with qualified assessor the specific responsibilities in gathering evidence and types of evidence to be gathered
2. Confirm organisational arrangements for evidence gathering	2.1 Access and confirm relevant ***assessment system policies and procedures;*** organisational, legal and ethical requirements; and other relevant advice on assessment 2.2 Clarify nominated ***assessment tools*** and methods for collecting evidence with qualified assessor, to ensure that procedures to be followed and instruments to be used are clear 2.3 Discuss and confirm with relevant people ***assessment context,*** including candidate's characteristics and any need for ***reasonable adjustments*** 2.4 Confirm and arrange ***resource requirements*** in consultation with relevant people
3. Collect evidence in accordance with the assessment plan	3.1 Explain assessment process to candidate, including the different responsibilities of the parties involved, and refer any candidate issues or concerns to qualified assessor prior to undertaking assessment activities 3.2 Use ***assessment instruments*** to gather quality evidence within available time and resources, according to organisational, legal and ethical requirements
4. Record and report findings	4.1 Organise and provide evidence to the qualified assessor in a format suitable for analysis according to assessment system policies and procedures 4.2 Actively seek feedback from the qualified assessor on whether evidence-gathering activities meet the principles of assessment and whether evidence collected meets the rules of evidence 4.3 Document areas for improvement in collecting evidence, for future assessment activities

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- observation skills to observe candidate performance
- cognitive and interpretation skills to ensure collection of valid and reliable evidence
- organisational skills to collect evidence
- time-management skills to schedule assessment events and activities
- literacy skills to:
  - read and interpret relevant information
  - prepare required documentation and collate evidence in required format
- communication skills to:
  - discuss evidence-gathering processes with practitioners and candidates
  - provide constructive and supportive feedback
  - ask appropriate questions to clarify and confirm instructions for evidence gathering
  - provide clear and concrete options and advice.

Required knowledge

- competency-based assessment, including:
  - criterion referenced
  - competency standards as the benchmarks for assessment
  - competency-based reporting
- principles of assessment
- rules of quality evidence
- different purposes of assessment
- diversity of assessment contexts
- evidence, including different types of evidence
- evidence-gathering methods – what are assessment methods and different types of methods
- purpose and features of assessment tools and assessment plans
- potential barriers and processes relating to evidence-gathering procedures and assessment processes
- organisational assessment system policies and procedures relevant to this unit of competency
- technical or subject area being assessed
- cultural sensitivity and equity considerations
- relevant policy, legislation, codes of practice and national standards, including commonwealth and state or territory legislation, that may affect training and assessment in the vocational education and training sector
- OHS relating to the work role, and OHS considerations to be included in collecting evidence, including:
  - hazard identification and risk control measures
  - requirements for reporting hazards and incidents

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- emergency procedures
- procedures for use of relevant personal protective equipment
- safe use of relevant equipment
- sources of OHS information
- role of key workplace personnel
- responsibilities of learners.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • carry out a minimum of three evidence-gathering activities, with different candidates for each activity • present documentation of the evidence in a clear and concise manner • present documented feedback from others involved in the assessment.
Context of and specific resources for assessment	Evidence must be gathered in the workplace wherever possible. Where no workplace is available, a simulated workplace must be provided.
Method of assessment	
Guidance information for assessment	

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Purpose of assessment may be:	• recognise current existing competency of candidates • determine if competency has been achieved following learning • establish candidate progress towards achievement of competence • determine language, literacy and numeracy needs of candidate • certify competence through a Statement of Attainment • establish progress towards a qualification • determine training gaps of candidate • measure work performance • classify employee and support career progression • meet organisational requirements for work, such as operating equipment or developing new skills • satisfy licensing or regulatory requirements.
Relevant people must include:	• qualified assessors • candidates.
Benchmarks for assessment:	• refer to criteria against which candidate is assessed • may be a competency standard/unit of competency, assessment criteria of course curricula, performance specifications, or product specifications.
Assessment plan must include:	• purpose and aims of assessment • context of assessment • relevant benchmarks for assessment • other assessment information and documentation identified as relevant.
Assessment system policies and procedures may include:	• candidate selection • rationale and purpose of competency-based assessment • assessment records, data management and information management • recognition of current competency, recognition of prior learning and credit arrangements.
Assessment tools include:	• the learning or competency unit(s) to be assessed • the target group, context and conditions for the assessment • the tasks to be administered to the candidate • an outline of the evidence to be gathered from the candidate • the evidence criteria used to judge the quality of performance (i.e. the assessment decision-making rules)

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	• the administration, recording and reporting requirements • the evidence of how validity and reliability have been tested and built into the design and use of the tool.
Assessment context may include:	• environment in which assessment will be carried out • relationship between units of competency and candidate's workplace • time period over which assessment takes place.

Reasonable adjustments may include:	• taking into account candidate's language, literacy and numeracy requirements
	• providing personal support services, such as arranging for:
	  • member of the community to accompany the candidate
	  • reader
	  • interpreter
	  • attendant carer
	  • scribe
	• using adaptive technology or special equipment
	• providing flexible assessment sessions to allow for such things as fatigue or administering of medication
	• format of assessment materials, such as:
	  • in Braille
	  • in first language
	  • use of audiotape or videotape
	• making adjustments to the physical environment
	• revising proposed assessment methods and instruments
	• considering age and gender
	• considering cultural beliefs, traditional practices and religious observances.

Resource requirements may include:	• resources specific to evidence-gathering activities • access to assessors • access to policy and procedures • access to subject and technical experts • OHS requirements • plant, equipment and technology.

Assessment instruments may include:	• instruments developed by an assessor as part of formative or summative assessment activities, including:
	  • profiles of acceptable performance measures
	  • templates and proformas
	  • specific questions or activities
	  • evidence and observation checklists
	  • checklists for the evaluation of work samples
	  • recognition portfolios

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	• candidate self-assessment materials • instruments developed elsewhere that have been modified by the assessor for use with a particular client group.

Unit Sector(s)

Assessment

Custom Content Section

Not applicable.

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TAEASS402B Assess competence

Modification History

Version	Comments
TAEASS402B	Released with *TAE10 Training and Education Training Package version 2.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to assess the competence of a candidate.

Application of the Unit

This unit typically applies to assessors.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Prepare for assessment	1.1 Interpret ***assessment plan*** and confirm organisational, legal and ethical requirements for conducting assessment with relevant people 1.2 Access and interpret relevant ***benchmarks for assessment*** and nominated ***assessment tools*** to confirm the requirements for evidence to be collected 1.3 Arrange identified material and physical resource requirements according to assessment system policies and procedures 1.4 Organise ***specialist support*** required for assessment 1.5 Explain, discuss and agree details of the assessment plan with candidate
2. Gather quality evidence	2.1 Use agreed ***assessment methods*** and instruments to gather, organise and document evidence in a format suitable for determining competence 2.2 Apply the principles of assessment and rules of evidence in gathering quality evidence 2.3 Determine opportunities for evidence gathering in actual or simulated activities through consultation with the candidate and relevant personnel 2.4 Determine opportunities for integrated assessment activities and document any changes to assessment instruments where required
3. Support the candidate	3.1 Guide candidates in gathering their own evidence to support recognition of prior learning (RPL) 3.2 Use appropriate communication and interpersonal skills to develop a professional relationship with the candidate that reflects sensitivity to ***individual differences*** and enables two-way ***feedback*** 3.3 Make decisions on reasonable adjustments with the candidate, based on candidate's needs and characteristics 3.4 Access required specialist support in accordance with the assessment plan 3.5 Address any OHS risk to person or equipment immediately
4. Make the assessment decision	4.1 Examine collected evidence and evaluate it to ensure that it reflects the evidence required to demonstrate competence 4.2 Use judgement to infer whether competence has been demonstrated, based on the available evidence 4.3 Make assessment decision in line with agreed assessment procedures and according to agreed assessment plan 4.4 Provide clear and constructive feedback to candidate regarding

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	the assessment decision and develop any follow-up action plan required
5. Record and report the assessment decision	5.1 Record assessment outcomes promptly and accurately 5.2 Complete and process an assessment report according to agreed assessment procedures 5.3 Inform other relevant parties of the assessment decision according to confidentiality conventions
6. Review the assessment process	6.1 Review the assessment process in ***consultation*** with relevant people to improve own future practice 6.2 Document and record the review according to relevant assessment system policies and procedures

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- analysis and interpretation skills to:
  - break down competency standards
  - interpret assessment tools and other assessment information, including those used in RPL
  - identify candidate needs
  - make judgements based on assessment of available evidence
- observation skills to:
  - recognise candidate's prior learning
  - determine candidate's performance
  - identify when candidate may need assistance during the assessment processes
- research and evaluation skills to:
  - access required human and material resources for assessment
  - access assessment system policies and procedures
  - access RPL policies and procedures
  - evaluate evidence
  - evaluate assessment process
- cognitive skills to:
  - weigh up the evidence and make a judgement
  - consider and recommend reasonable adjustments
- decision-making skills to:
  - recognise a candidate's prior learning
  - make a decision on a candidate's competence
- literacy skills to:
  - read and interpret relevant information to conduct assessment
  - prepare required documentation and records or reports of assessment outcomes in required format
- communication and interpersonal skills to:
  - explain the assessment, including RPL process
  - give clear and precise instructions
  - ask effective questions
  - provide clarification
  - discuss process with other relevant people
  - give appropriate feedback
  - discuss assessment outcome
  - use language appropriate to candidate and assessment environment
  - establish a working relationship with candidate.

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Required knowledge

- competency-based assessment, including:
  - vocational education and training as a competency-based system
  - criterion-referenced assessment as distinct from norm-referenced assessment
  - competency standards as the basis of qualifications
  - structure and application of competency standards
  - principles of assessment and how they are applied
  - rules of evidence and how they are applied
  - range of assessment purposes and assessment contexts, including RPL
  - different assessment methods, including suitability for gathering various types of evidence, suitability for content of units, and resource requirements and associated costs
  - reasonable adjustments and when they are applicable
  - types and forms of evidence, including assessment instruments that are relevant to gathering different types of evidence used in competency-based assessment, including RPL
  - potential barriers and processes relating to assessment tools and methods
  - assessment system, including policies and procedures established by the industry, organisation or training authority
- RPL policies and procedures established by the organisation
- cultural sensitivity and equity considerations
- relevant policy, legislation, codes of practice and national standards, including commonwealth and state or territory legislation that may affect training and assessment in the vocational education and training sector, such as:
  - copyright and privacy laws in terms of electronic technology
  - security of information
  - plagiarism
  - training packages and competency standards
  - licensing requirements
  - industry and workplace requirements
  - duty of care under common law
  - recording information and confidentiality requirements
  - anti-discrimination, including equal employment opportunity, racial vilification and disability discrimination
  - workplace relations
  - industrial awards and enterprise agreements
- OHS responsibilities associated with assessing competence, such as:
  - requirements for reporting hazards and incidents
  - emergency procedures
  - procedures for use of relevant personal protective equipment
  - safe use and maintenance of relevant equipment

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- sources of OHS information.
-

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to:
	• assess competence of a number of candidates within the vocational education and training context against different units of competency or accredited curricula, following the relevant assessment plan
	• assess at least one candidate for RPL
	• consider reasonable adjustment and the reasons for decisions in at least one assessment
	• cover an entire unit of competency and show:
	  • the application of different assessment methods and instruments involving a range of assessment activities and events
	  • two-way communication and feedback
	  • how judgement was exercised in making the assessment decision
	  • how and when assessment outcomes were recorded and reported
	  • assessment records and reports completed in accordance with assessment system and organisational, legal and ethical requirements
	  • how the assessment process was reviewed.

Context of and specific resources for assessment	Evidence must be gathered in the workplace whenever possible. Where no workplace is available, a simulated workplace must be provided.
Method of assessment	
Guidance information for assessment	

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Assessment plan may include:	• overall planning, describing:
	  • what is to be assessed
	  • when assessment is to take place
	  • where assessment is to take place
	  • how assessment is to take place.

Benchmarks for assessment:	• refer to a criterion against which the candidate is assessed • may be a competency standard/unit of competency, assessment criteria of course curricula, performance specifications, or product specifications.
Assessment tools include:	• the learning or competency unit(s) to be assessed • the target group, context and conditions for the assessment • the tasks to be administered to the candidate • an outline of the evidence to be gathered from the candidate • the evidence criteria used to judge the quality of performance (i.e. the assessment decision-making rules) • the administration, recording and reporting requirements • the evidence of how validity and reliability have been tested and built into the design and use of the tool.
Specialist support may include:	• assistance by third party, such as carer or interpreter • support from specialist educator • provision of developed online assessment activities • support for remote or isolated candidates and assessors • support from subject matter or safety experts • advice from regulatory authorities • assessment teams and panels • support from lead assessors • advice from policy development experts.
Assessment methods include:	• particular techniques used to gather different types of evidence, such as: • direct observation

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	• structured activities • oral or written questioning • portfolios of evidence • review of products • third-party feedback.
Individual differences may include:	• English language, literacy and numeracy barriers • physical impairment or disability • intellectual impairment or disability • medical condition that may impact on assessment, such as arthritis, epilepsy, diabetes and asthma • learning difficulties • mental or psychological disability • religious and spiritual observances • cultural images and perceptions • age • gender.
Feedback may include:	• ensuring assessment/RPL process is understood • ensuring candidate concerns are addressed • enabling questions and answers • confirming outcomes • identifying further evidence to be provided • discussing action plans • confirming gap training needed • providing information regarding available appeal processes • suggesting improvements in evidence gathering and presentation.
Consultation may involve:	• moderation with other assessors, or training and assessment coordinators • discussions with client, team leaders, managers, RPL coordinators, supervisors, coaches and mentors • technical and subject experts • English language, literacy and numeracy experts.

Unit Sector(s)

Assessment

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Custom Content Section

Not applicable.

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TAEASS403B Participate in assessment validation

Modification History

Version	Comments
TAEASS403B	Released with *TAE10 Training and Education Training Package version 2.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to participate in an assessment validation process.

Application of the Unit

This unit typically applies to those participating in assessment validation. It does not address leading the validation process.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Prepare for validation	1.1 Discuss and confirm the approach to validation according to defined purposes, context, and relevant ***assessment system policies and procedures*** 1.2 Analyse relevant ***benchmarks for assessment*** and agree on the evidence needed to demonstrate competence 1.3 Arrange ***materials*** for ***validation activities***
2. Contribute to validation process	2.1 Demonstrate active ***participation*** in validation sessions and activities using appropriate communication skills 2.2 Participate in validation sessions and activities by applying the principles of assessment and rules of evidence 2.3 Check all documents used in the validation process for accuracy and version control
3. Contribute to validation outcomes	3.1 Collectively discuss validation findings to support improvements in the quality of assessment 3.2 Discuss, agree and record recommendations to improve assessment practice 3.3 Implement changes to own assessment practice, arising from validation

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- planning skills to participate in validation activities within agreed timeframes
- problem-solving skills to identify information that is inconsistent, ambiguous or contradictory
- evaluation skills to:
  - determine evidence requirements from competency standards
  - review assessment process, tools and methods
  - review collected evidence
- communication skills to share information in validation meetings.

Required knowledge

- how to interpret competency standards and other related assessment information to determine the evidence needed to demonstrate competence, including:
  - criterion-referenced assessment as distinct from norm-referenced assessment
  - various reasons for carrying out validation and the different approaches to validation that may be appropriate before, during and after assessment
  - critical aspects of validation, including validation of assessment processes, methods and products
  - relevant OHS legislation, codes of practice, standards and guidelines, impacting on assessment
  - legal and ethical requirements of assessors, particularly in relation to validation activities
- principles of assessment
- rules of evidence.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • actively participate in a minimum of two validation sessions or meetings which, in combination, address the critical aspects of validation using different validation approaches and activities • clearly explain purposes of validation and the legal and ethical responsibilities of assessors • collate documentation relating to validation process in a logical manner • demonstrate communication and liaison with relevant people • provide feedback and interpret documentation in validation sessions • record contribution to validation findings.
Context of and specific resources for assessment	Evidence must be gathered in the workplace wherever possible. Where no workplace is available, a simulated workplace must be provided. Assessment must ensure access to: • assessment reports and records • other documentation relevant to validation.
Method of assessment	
Guidance information for assessment	

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Assessment system policies and procedures may include:	• candidate selection • rationale and purpose of competency-based assessment • assessment records, and data and information management • recognition of current competency, recognition of prior learning and credit arrangements • assessment reporting procedures • assessment appeals • candidate grievances and complaints • validation • evaluation and internal audit • costs and resourcing • access and equity, and reasonable adjustment • partnership arrangements • links with human resource or industrial relations system • links with overall quality management system.
Benchmarks for assessment:	• refers to criterion against which the candidate is assessed • may be one or more units of competency or assessment criteria of course curricula.
Materials may include:	• assessment tools • samples of collected evidence • documentation outlining the basis of assessment decisions • reports and records of assessment decisions • samples of benchmarks of appropriate evidence • Assessment Guidelines of the relevant training packages • information from the evidence guide of the relevant units of competency.

Validation activities may include:	• analysing and reviewing:
	  • assessment tools
	  • collected evidence
	  • assessment decisions and records of assessment outcomes
	  • other aspects of assessment policies, processes and outcomes
	• recording evidence of validation processes and outcomes.

Participation may include comparison and	• assessment practices • assessment plans

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evaluation of:	• interpretation of units of competency • assessment methods and instruments • assessment decisions • collected evidence.

Unit Sector(s)

Assessment

Custom Content Section

Not applicable.

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TAEDEL301A Provide work skill instruction

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to conduct individual and group instruction and demonstrate work skills, using existing learning resources in a safe and comfortable learning environment. The unit covers the skills and knowledge required to determine the success of both the training provided and one's own personal training performance. It emphasises the training as being driven by the work process and context.

Application of the Unit

Application of the unit	This unit supports a wide range of applications across any workplace setting and so can be used by any organisation. Its use is not restricted to training organisations.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise instruction and demonstration	1.1. Gather information about ***learner characteristics*** and learning needs 1.2. Confirm a ***safe learning environment*** 1.3. Gather and check ***instruction and demonstration objectives*** and seek assistance if required 1.4. Access and review relevant ***learning resources*** and ***learning materials*** for suitability and relevance, and seek assistance to interpret the contextual application 1.5. Organise access to necessary equipment or physical resources required for instruction and demonstration 1.6. Notify learners of ***details*** regarding the implementation of the learning program and/or delivery plan
2. Conduct instruction and demonstration	2.1. Use interpersonal skills with learners to establish a safe and comfortable learning environment 2.2. Follow the learning program and/or delivery plan to cover all learning objectives 2.3. Brief learners on any ***OHS procedures*** and requirements prior to and during training 2.4. Use ***delivery techniques*** to structure, pace and enhance learning 2.5. Apply ***coaching*** techniques to assist learning 2.6. Use communication skills to provide information, instruct learners and demonstrate relevant work skills 2.7. Provide opportunities for practice during instruction and through work activities 2.8. Provide and discuss feedback on learner performance to support learning
3. Check training performance	3.1. Use ***measures*** to ensure learners are acquiring and can use new technical and generic skills and knowledge 3.2. Monitor learner progress and outcomes in consultation with learner 3.3. Review relationship between the trainer/coach and the learner and adjust to suit learner needs
4. Review personal training performance and finalise documentation	4.1. Reflect upon personal performance in providing instruction and demonstration, and document strategies for improvement 4.2. Maintain, store and secure learner records according

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ELEMENT	PERFORMANCE CRITERIA
	to organisational and legal requirements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- verbaland non-verbal communication techniques, such as:
  - asking relevant and appropriate questions
  - providing explanations
  - demonstrating
  - using listening skills
  - providing information clearly
- safety skills to implement OHS requirements, by acting and responding safely in order to:
  - identify hazards
  - conduct prestart-up checks if required
  - observe and interpret learner behaviour that may put people at risk
- time-management, skills to:
  - ensure all learning objectives are covered
  - pace learning
- reflection skills in order to:
  - identify areas for improvement
  - maintain personal skill development
- literacy skills to:
  - complete and maintain documentation
  - read and follow learning programs and plans
  - read and analyse learner information
- technology skills to operate audio-visual and technical equipment
- interpersonal skills to:
  - engage, motivate and connect with learners
  - provide constructive feedback
  - maintain appropriate relationships
  - establish trust
  - use appropriate body language
  - maintain humour
  - demonstrate tolerance
  - manage a group
  - recognise and be sensitive to individual difference and diversity
- observation skills to:
  - monitor learner acquisition of new skills, knowledge and competency

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REQUIRED SKILLS AND KNOWLEDGE
requirements • assess learner communication and skills in interacting with others • identify learner concerns • recognise learner readiness to take on new skills and tasks
Required knowledge

• learner characteristics and needs
• content and requirements of the relevant learning program and/or delivery plan
• sources and availability of relevant learning resources and learning materials
• content of learning resources and learning materials
• training techniques that enhance learning and when to use them
• introductory knowledge of learning principles and learning styles
• key OHS issues in the learning environment, including:
  • roles and responsibilities of key personnel
  • responsibilities of learners
  • relevant policies and procedures, including hazard identification, risk assessment, reporting requirements, safe use of equipment and emergency procedures
  • risk controls for the specific learning environment

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment must address the scope of this unit and reflect all components of the unit. A range of appropriate assessment methods and evidence-gathering techniques must be used to determine competency. A judgement of competency should only be made when the assessor is confident that the required outcomes of the unit have been achieved and that consistent performance has been demonstrated.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to:
	• carry out aminimum of three training sessions, involving demonstrating and instructing particular work skills for different groups; with each session addressing:
	  • different learning objectives
	  • a range of techniques and effective communication skills appropriate to the audience.

Context of and specific resources for assessment	Evidence must be gathered in the workplace wherever possible. Where no workplace is available, a simulated workplace must be provided.
Method of assessment	
Guidance information for assessment	For further information about assessment of this and other TAE units, refer to relevant implementation guidance published on the IBSA website (www.ibsa.org.au).

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Learner characteristics may include:	• language, literacy and numeracy levels • learning styles • past learning and work experiences • specific needs • workplace culture.
Safe learning environment may include:	• exit requirements • personal protective equipment • safe access • safe use of equipment.

Instruction and demonstration objectives may include:	• competencies to be achieved
	• generic and technical skills, which may be:
	  • provided by the organisation
	  • developed by a colleague
	  • individual or group objectives
	  • learning outcomes.

Learning resources may include:	• any material used to support learning, such as:
	  • learner and user guides
	  • trainer and facilitator guides
	  • example training programs
	  • specific case studies
	  • professional development materials
	  • assessment materials
	• a variety of formats
	• those produced locally
	• those acquired from other sources.

Learning materials may include:	• handouts for learners • materials sourced from the workplace, e.g. workplace documentation, operating procedures, and specifications.
Details may include:	• location and time • outcomes of instruction or demonstration

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RANGE STATEMENT	
	• reason for instruction or demonstration • who will be attending instruction session.
OHS procedures may include:	• emergency procedures • hazards and their means of control • incident reporting • use of personal protective equipment • safe work practices • safety briefings • site-specific safety rules.
Delivery techniques may include:	• coaching • demonstration • explanation • group or pair work • providing opportunities to practise skills and solve problems • questions and answers.
Coaching may include:	• learning arrangements requiring immediate interaction and feedback • on-the-job instruction and 'buddy' systems • relationships targeting enhanced performance • short-term learning arrangements • working on a one-to-one basis.
Measures may include:	• informal review or discussion • learner survey • on-the-job observation • review of peer coaching arrangements.

Unit Sector(s)

Unit sector	Delivery and facilitation

Competency field

Competency field	

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Co-requisite units

Co-requisite units		

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TAAASS401C Plan and organise assessment

Modification History

Not applicable.

Unit Descriptor

This unit specifies the competence required to plan and organise the assessment process, including recognition of prior learning (RPL), in a competency-based assessment system.

Application of the Unit

This unit addresses the competence of planning the assessment process and making the organisational arrangements which enable assessment to occur. It includes assessments carried out as part of a Recognition of Prior Learning Process (RPL) or as part of a learning and assessment pathway.

The critical focus of this unit is on developing an assessment plan that will be used to guide assessor/s in conducting competency-based assessments. The unit also covers contextualisation of the assessment benchmarks and assessment tools to address the environment in which assessment will take place and organising the human, material and physical resources needed to conduct the assessment.

This competence applies to planning and organising an assessment process, including RPL which may involve single or multiple candidates being assessed against individual or multiple unit/s of competency.

The planning function in assessment is distinguished as a discrete activity and may be undertaken by the assessor responsible for assessing the candidates reflected in the assessment plan or by another person in the organisation.

This competence is to be applied in the context of an existing assessment strategy which documents the overall framework for assessment at a qualification level. In this context, the assessment plan adds further detail relating to the specific organisational arrangements for assessment/s, including RPL against individual unit/s of competency.

The competence of developing an assessment strategy is separately addressed in two other units of the **TAA04 Training and Assessment Training Package**: **TAADES501B Design and develop learning strategies** (in a learning and assessment pathway) and **TAAASS501B Lead and co-ordinate assessment systems and services** (in an assessment only pathway).

The achievement of this unit includes interpretation of competency standards, (where competency standards are used as the benchmarks for assessment). **TAADES401B Use Training Packages to meet client needs** addresses this skill in depth.

The competence specified in this unit is typically required by assessors, workplace supervisors with assessment planning responsibilities, trainers or other assessors responsible for planning assessment, including RPL

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.
Performance criteria describe the performance needed to demonstrate achievement of the element. Where **bold italicised** text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 **Determine approach for assessment**	1.1 Candidate/s are identified/confirmed and the **purpose/s** and **context of assessment/ RPL** are established/ confirmed with **relevant people** in accordance with **legal/organisational/ethical requirements**
	1.2 A decision is made whether assessment will be undertaken within an RPL, a learning and assessment pathway or a combined approach
	1.3 The **assessment strategy** is accessed and used to guide the development of the assessment plan, where applicable
	1.4 The **benchmarks for assessment/ RPL** are identified/confirmed and accessed

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2	**Prepare the assessment/ RPL plan**	2.1 The assessment benchmarks are interpreted to determine the **evidence** and **types of evidence** needed to demonstrate competency in accordance with the **rules of evidence**
		2.2 Where competency standards are used as benchmarks**, all component parts of the competency standards**, are addressed in defining and documenting the evidence to be collected
		2.3 Any **related documentation** to support planning the assessment process is accessed and interpreted
		2.4 **Assessment/RPL methods** and **assessment tools** are **selected/confirmed** which address the evidence to be collected in accordance with the **principles of assessment**
		2.5 Specific **material and physical resources** required to collect evidence are identified and documented
		2.6 Roles and responsibilities of all people involved in the assessment process are clarified, agreed and documented
		2.7 Timelines and time periods for evidence collection are determined and all information to be included in the **assessment plan** is documented
		2.8 The assessment/RPL plan is confirmed with **relevant personnel**
3	**Contextualise and review assessment/ RPL plan**	3.1 **Characteristics of the candidate/s** and any allowances for **reasonable adjustments and/or specific needs** are identified/clarified with relevant people and documented
		3.2 Where required, competency standards are **contextualised**, to reflect the operating environment in which assessment will occur, in accordance with **contextualisation guidelines**
		3.3 Selected assessment methods and assessment tools are examined and adjusted, where required, to ensure continuing applicability taking into account: any contextualisation of competency standards reasonable adjustment/s, where identified integration of assessment activities, where

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		appropriate and practical capacity to support **recognition of prior learning**
	3.4	Adjusted assessment tools are reviewed to ensure the specifications of the competency standards are still addressed
	3.5	The assessment plan is updated, as needed, to reflect ongoing contextualisation needs, any changes in organisational resource requirements or changes in response to the conduct of assessment
	3.6	Assessment plan/s are stored and retrieved in accordance with **assessment system policies and procedures** and legal/organisational/ethical requirements
4 **Organise assessment/ RPL arrangements**	4.1	Identified material and physical resource requirements are arranged in accordance with assessment system policies and procedures and legal/organisational/ethical requirements
	4.2	Any **specialist support** required for assessment/ RPL is organised and arranged in accordance with organisational/ethical/legal requirements, where required
	4.3	Roles and responsibilities of all people involved in the assessment/ RPL process are organised
	4.4	Effective **communication strategies** are established to encourage regular communication flow and feedback with relevant people involved in the assessment/RPL process
	4.5	Assessment/ RPL record keeping and reporting arrangements are confirmed

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

cognitive interpretation skills to:

accurately interpret competency standards and other assessment documentation

identify opportunities for integrated competency assessment

contextualise competency standards to the operating assessment environment, including RPL

sort information

observation skills to:

assess the effectiveness of the organisation's assessment, including RPL operations

identify where improvement to the assessment process can be made

identify where improvement to RPL policy and procedures can be made

technology skills to:

use appropriate equipment and software to communicate effectively with others

research and evaluation skills to:

obtain competency standards and other assessment information, assessment tools and other relevant assessment resources

research candidate characteristics and any reasonable adjustment needs

identify and confirm required material and physical resources

evaluate feedback, and determine and implement improvements to processes

make recommendations

planning skills relating to formulation of the assessment plan

organisational skills relating to organising resources required

literacy skills to:

read and interpret relevant information to design and facilitate assessment and recognition processes

prepare required documentation and information for those involved in assessment processes

communication skills to:

discuss assessment, including RPL processes with clients and assessors

establish professional relationships and networks

sensitivity to access and equity considerations and candidate diversity

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capacity to promote and implement equity, fairness, validity, reliability and flexibility in planning an assessment process

Required knowledge

competency-based assessment: work focused, criterion referenced, standards-based, evidence-based

the different purposes of assessment and different assessment contexts, including RPL.

how to read and interpret the identified competency standards as the benchmarks for assessment

how to contextualise competency standards within relevant guidelines

the four principles of assessment and how they guide the assessment process

what is evidence and different types of evidence used in competency-based assessments, including RPL

the four rules of evidence and how they guide evidence collection

different types of assessment methods, including suitability for collecting various types of evidence

assessment tools and their purpose; different types of tools; relevance of different tools for specific evidence gathering opportunities

different resource requirements for assessment and associated costs

where to source other relevant assessment information and how to incorporate this into the plan

the principles of inclusivity, and strategies for reasonable adjustment, without compromise to the competency standards

sources and types of specialist support to candidates

methodologies suitable for reviewing assessment tools

the assessment system policies and procedures established by the industry and/or organisation

the RPL policies and procedures established by the organisation

risks and requirements associated with different assessment applications in various contexts, including:

capacities of assessors at higher AQF levels

when linked to licensing

legal implications of assessing competence

the relevant organisational/legal/ethical requirements impacting on the planning and organisation of assessment, as set out in the Range Statement of the relevant competency standards

other relevant policy, legislation, codes of practice and national standards including national

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Commonwealth and state/territory legislation for example:

copyright and privacy laws in terms of electronic technology

security of information

plagiarism

licensing requirements

anti-discrimination including equal opportunity, racial vilification and disability discrimination

workplace relations

industrial awards/enterprise agreements

OHS responsibilities associated with planning and organising assessment, such as:

hazards commonly found, and preferred risk controls for the specific assessment environment

OHS procedures to be observed in the assessment process

safe use and maintenance of relevant equipment

sources of OHS information

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Evidence Guide

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of Assessment	To demonstrate competence against this unit, candidates must be able to provide evidence that they have developed an assessment plan and organised the material resources and personnel to support the assessment process. The evidence provided must describe how the purpose of assessment was identified; contain structured plans that detail the selection/confirmation of assessment methods and tools, and assessment environments; include appropriate communication strategies with relevant people regarding the assessment process; outline resource requirements and special assistance required throughout the assessment process; and include recording and reporting requirements
Products that could be used as evidence include:	assessment plans modified/adjusted assessment tools to allow for specific needs contextualised competency standards documentation of consultations with clients and other stakeholders regarding the assessment purpose and context
Processes that could be used as evidence include:	how competency standards and other documents were interpreted how assessment activities were scheduled how RPL is incorporated in the assessment process how resources were identified and obtained how communication systems were used to include relevant stakeholders in the planning process how assistance was sought from individuals

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	providing specialist support
Resource implications for assessment include:	access to relevant Training Package/s access to assessment materials and tools access to other relevant assessment information access to suitable assessment venue/equipment access to RPL policy and procedures workplace documentation cost/time considerations personnel requirements
The collection of quality evidence requires that:	assessment must address the scope of this unit and assessment must address the scope of this unit and reflect all components of the unit, i.e. the Elements, Performance Criteria, Range Statement, Evidence Guide, Employability Skills a range of appropriate assessment methods/evidence gathering techniques is used to determine competency, including RPL. evidence must be gathered in the workplace whenever possible. Where no workplace is available, a simulated workplace must be provided the evidence collected must relate to a number of performances assessed at different points in time and in a learning and assessment pathway these must be separated by further learning and practice evidence collected must relate to at least one RPL assessment assessment meets the rules of evidence a judgement of competence should only be made when the assessor is confident that the required outcomes of the unit have been achieved and that consistent performance has been demonstrate
Specific evidence requirements must	evidence of planning and organising the assessment process on a minimum of two

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include:	occasions. The evidence collected must: address the provision of documented assessment plans cover a range of assessment events cater for a number of candidates relate to different competency standards or accredited curricula address an RPL assessment involve the contextualisation of competency standards and the selected assessment tools, where required incorporate consideration of reasonable adjustment strategies include organisational arrangements
Integrated assessment means that:	this unit can be assessed alone or as part of an integrated assessment activity involving relevant units in the **TAA04 Training and Assessment Training Package**. Suggested units include but are not limited to: **TAAASS402C Assess competence** **TAAASS403B Develop assessment tools** **TAAASS404B Participate in assessment validation** **TAADES401B Use Training Packages to meet client needs**

Range Statement

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The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. **Bold italicised** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Purpose/s of assessment may include:	recognising current existing competence of candidate/s
	determining if competence has been achieved following learning
	establishing candidate/s progress towards achievement of competence
	determining language, literacy, numeracy needs of candidates/s
	certifying competence through a Statement of Attainment
	establishing progress towards a qualification
	determining training gaps of candidate/s
	measuring work performance
	classifying employees/support career progression
	meeting organisational requirements for work - operate equipment/develop new skills
	licensing or regulatory requirements
Context of assessment/ RPL may include:	part of the enrolment process
	the environment in which the assessment/RPL will be carried out, including real work/simulation
	opportunities for collecting evidence in a number of situations
	relationships between competency standards and evidence to support recognition of prior learning
	who carries out the assessment/RPL
	relationships between competency standards and work activities in the candidate's workplace
	relationships between competency standards and learning activities

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	auspicing and partnership arrangements
	the period of time during which the assessment takes place
	apportionment of costs/fees, if applicable
	quality assurance mechanisms
Relevant people must include:	the candidate/s
	the assessor/s responsible for conducting the assessment/RPL, which may be self or other assessors
Relevant people may include:	the client, company or organisation
	team leaders, managers, supervisors
	delivery personnel
	technical/subject experts
	training and assessment coordinators
	RPL coordinators
	industry regulators
	employee and employer representatives
	members of professional associations
	Commonwealth department official/Centrelink personnel/caseworker
	Australian Apprenticeship Centre (AAC) personnel
Legal/organisational/ethical requirements may include:	assessment system policies and procedures
	assessment strategy requirements
	reporting, recording and retrieval systems for assessment, including RPL
	quality assurance systems
	business and performance plans
	access and equity policies and procedures
	collaborative/partnership arrangements
	defined resource parameters
	mutual recognition arrangements
	industrial relations systems and processes, awards/enterprise agreements
	Australian Quality Training Framework

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	(AQTF2007) registration scope human resources policies/procedures legal requirements including anti-discrimination, equal employment, job role/responsibilities/conditions relevant industry codes of practice confidentiality and privacy requirements OHS considerations, including: ensuring OHS requirements are adhered to during the assessment process identifying and reporting OHS hazards and concerns to relevant personnel
The **assessment strategy** is a documented framework to guide and structure assessment arrangements for a vocational education and training qualification. In a learning and assessment pathway it is addressed as part of the learning strategy. In an assessment only pathway it is a separate document. The assessment strategy may encompass:	the identification of the competency standards forming the qualification and interpretation of the packaging rules of the qualification, where part of a Training Package interpretation of the competency standards as the benchmarks for assessment application of Training Package Assessment Guidelines, where part of a Training Package arrangements for RPL, including provision of guidance and assistance to candidates in gathering and evaluating evidence determination of assessment methods for identified competency standards selection of assessment tools for identified competency standards organisational arrangements for assessment, including physical and human resources, roles and responsibilities and partnership arrangements (where relevant) nominated quality assurance mechanisms identified risk management strategies
Benchmark/s for assessment/ RPL refers to:	the criterion against which the candidate is assessed or prior learning recognised which, may be a competency standard/unit of competency, assessment criteria of course

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	curricula, performance specifications, product specifications
Evidence is:	material collected which, when matched against the specifications in the competency standards, provides proof of competency achievement
Types of evidence may include:	direct, e.g. observation of work activities under real/simulated work conditions, examples of work products indirect, e.g. third party reports from a range of sources supplementary, e.g. question and answer, work records, training records, portfolios candidate gathered evidence assessor gathered evidence current/recent/historical combination of above
The **rules of evidence** guide the evidence collection process to ensure evidence is:	valid, for example: address the elements and Performance Criteria reflect the skills and knowledge described in the relevant unit/s of competency show application in the context described in the Range Statement demonstrate performance skills and knowledge are applied in real/simulated workplace situations
	current, for example: demonstrate the candidate's current skills and knowledge comply with current standards
	sufficient, for example: demonstrate competence over a period of time demonstrate repeatable competence

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	not inflate the language, literacy and numeracy requirements beyond those required in performing the work task
	authentic, for example: be the work of the candidate be corroborated/verified
All component parts of the competency standards refers to:	Elements Performance Criteria Employability Skills Range Statement including advice on: range of contexts/conditions to be met in assessment aspects of the Performance Criteria that can be contextualised information which adds definition to support assessment links to knowledge and skills underpinning language, literacy and numeracy requirements
	Evidence Guide requirements, including: underpinning/required knowledge underpinning/required skills and attributes underpinning language, literacy and numeracy requirements critical aspects of evidence to be considered/quality evidence requirements concurrent assessment and interdependence of units assessment methods/resources/context
	dimensions of competency, which include: task skills task management skills contingency management skills

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job role/environment skills

requirements set out in the Assessment Guidelines of the relevant Training Package/s

Related documentation may include:

information from the competency standards about the resources required for assessment, the assessment context, appropriate assessment methods

assessment activities identified in accredited modules derived from the relevant competency standards

assessment activities in Support Materials related to the relevant competency standards

RPL policy and procedures

any requirements of OHS, legislation, codes of practice, standards and guidelines

indicators and levels of competence of the National Reporting System

organisational requirements for demonstration of work performance

product specifications

direct observation, for example:

real work/real time activities at the workplace

work activities in a simulated workplace environment

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Assessment/ RPL methods are the particular techniques used to gather different types of evidence and may include:	structured assessment activities, for example: simulation exercises/role-plays projects assignments presentations activity sheets questioning, for example: written questions, e.g. on a computer interviews self-assessment verbal questioning questionnaires oral/written examinations (for higher AQF levels portfolios, for example: collections of work samples by the candidate product with supporting documentation historical evidence journal/log book information about life experience review of products, for example: products as a result of a project work samples/products third party feedback, for example: testimonials/reports from employers/supervisors evidence of training authenticated prior achievements interview with employer, supervisor, peers the instruments developed from the selected

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	assessment methods to be used for gathering evidence such as: a profile of acceptable performance measures templates/proformas specific questions or activities evidence/observation checklists checklists for the evaluation of work samples candidate self-assessment materials
Assessment tools contain:	the procedures, information and instructions for the assessor/candidate relating to the use of assessment instruments and assessment conditions
Selected/confirmed means:	selected on the basis that they are suitable and effective in collecting the evidence in light of the purpose and context confirmed in accordance with the assessment strategy, where appropriate
Principles of assessment are:	fairness flexibility reliability validity
Material and physical resources may include:	documents required for the assessors and candidates, including competency standards and assessment tools plant and equipment technology personal protective equipment venues for assessment adaptive technologies physical adjustments to assessment environment
Assessment plan is the overall planning document for the assessment process and may include:	the purpose and aims of the assessment the context of assessment/RPL relevant competency standards to be used as the benchmarks for assessment/RPL other assessment information/documentation

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identified as relevant

identified personnel

identified assessment methods and assessment tools

possibilities for clustering units of competency for assessment purposes

identified OHS hazards, including assessed risks and control strategies

material and/or physical resources required

organisational arrangements for conducting assessment/RPL

OHS reporting requirements

any special assessment needs, e.g. personal protective equipment requirements

outline of assessment milestones, time lines and target dates

candidate self-assessment procedures

connections to relevant organisational plans, polices and procedures

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Relevant personnel may include:	self in such contexts as one-person/small training and/or assessment organisation lead assessor training and/or assessment supervisor/coordinator training and/or assessment manager
Characteristics of the candidate/s may include:	level of work experience level and experiences of previous learning and assessment motivation for assessment - personal/organisational English language, literacy and/or numeracy levels/needs physical impairment or disability involving hearing, vision, voice, mobility intellectual impairment or disability medical condition such as arthritis, epilepsy, diabetes, asthma that is not obvious but may impact on assessment differences in learning progress psychiatric or psychological disability religious and spiritual observances cultural background images/perceptions age gender
Reasonable adjustments and/or specific needs must not compromise the integrity of the competency standards and may include:	adjustments to the assessment process taking into account candidate's language, literacy, numeracy requirements provision of personal support services, for example, reader, interpreter, attendant carer, scribe, member of community in attendance use of adaptive technology or special equipment flexible assessment sessions to allow for fatigue or administering of medication format of assessment materials, for example, in braille, first language, use of audiotape/

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	videotape adjustments to the physical environment or venue revising proposed assessment methods/tools considerations relating to age and/or gender, considerations relating to cultural beliefs, traditional practices, religious observances
Contextualised means:	to change the wording of some component parts of the competency standard to reflect the immediate operating environment
Contextualisation guidelines relate to:	DEST Guidelines on Training Package Contextualisation relevant Training Package contextualisation guidelines
Recognition of prior learning is defined as:	an assessment process that assesses an individual's non-formal and informal learning to determine the extent to which that individual has achieved the required learning outcomes, competency outcomes, or standards for entry to and/or partial or total completion of a qualification
Assessment system policies and procedures may include:	candidate selection rationale and purpose of competency-based assessment assessment records/data management/information management recognition of current competency/recognition of prior learning/credit arrangements assessors - needs, qualifications, maintaining currency assessment reporting procedures assessment appeals candidate grievances/complaints validation evaluation/internal audit costs/resourcing

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	access and equity/reasonable adjustment partnership arrangements links with human resource or industrial relations systems links with overall quality management system
Specialist support may include:	assistance by third party - carer, interpreter development of online assessment activities support for remote or isolated candidates and/or assessors support from subject matter or safety experts advice from regulatory authorities assessment teams/panels support from lead assessors advice from policy development experts
Communication strategies may include:	interviews (face-to-face or telephone) email, memos and correspondence meetings video conferencing/e-based learning focus groups email, memos and correspondence meetings video conferencing/e-based learning focus groups

Unit Sector(s)

Not applicable.

Competency Field

Assessment

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TAEASS401A Plan assessment activities and processes

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to plan and organise the assessment process, including recognition of prior learning (RPL), in a competency-based assessment system. It also includes the development of simple assessment instruments.

Application of the Unit

Application of the unit	This unit typically applies to assessors and workplace supervisors with assessment planning responsibilities; and trainers or other assessors responsible for planning assessment, including RPL. The unit is suitable for those with an existing assessment strategy which documents the overall framework for assessment.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine assessment approach	1.1. Identify candidate and confirm ***purposes and context of assessment/RPL*** with relevant people according to ***legal***, ***organisational and ethical requirements*** 1.2. Identify and access ***benchmarks for assessment/RPL*** and any specific assessment guidelines
2. Prepare the assessment plan	2.1. Determine evidence and ***types of evidence*** needed to demonstrate competence, according to the ***rules of evidence*** 2.2. Select ***assessment methods*** which will support the collection of defined evidence, taking into account the context in which the assessment will take place 2.3. Document all aspects of the ***assessment plan*** and confirm with relevant personnel
3. Develop assessment instruments	3.1. Develop ***simple assessment instruments*** to meet target group needs 3.2. Analyse ***available assessment instruments*** for their suitability for use and modify as required 3.3. ***Map assessment*** instruments against unit or course requirements 3.4. Write clear instructions for candidate about the use of the instruments 3.5. Trial draft assessment instruments to validate content and applicability, and record outcomes

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- cognitive interpretation skills to:
  - interpret competency standards and other assessment documentation, including material relating to reasonable adjustment
  - identify opportunities for integrated competency assessment
  - contextualise competency standards to the operating assessment environment, including RPL
  - consider access and equity needs of diverse candidates
- technology skills to use appropriate equipment and software to communicate effectively with others
- research and evaluation skills to:
  - obtain competency standards, assessment tools and other relevant assessment resources
  - research candidate characteristics and any reasonable adjustment needs
  - evaluate feedback, and determine and implement improvements to processes
- literacy skills to read and interpret relevant information to design and facilitate assessment and recognition processes
- communication skills to discuss assessment, including RPL processes with clients and other assessors
- interpersonal skills to:
  - demonstrate sensitivity to access and equity considerations and candidate diversity
  - promote and implement equity, fairness, validity, reliability and flexibility in planning an assessment processes

Required knowledge

- ethical and legal requirements of an assessor
- competency-based assessment, including:
  - work-focused
  - criterion-referenced
  - standards-based
  - evidence-based
- different purposes of assessment and different assessment contexts, including RPL
- how to read and interpret the identified competency standards as the benchmarks for assessment
- how to contextualise competency standards within relevant guidelines
- four principles of assessment and how they guide the assessment process

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REQUIRED SKILLS AND KNOWLEDGE
• purpose and features of evidence, and different types of evidence used in competency-based assessments, including RPL • rules of evidence and how they guide evidence collection • different types of assessment methods, including suitability for collecting various types of evidence • assessment tools and their purpose; different types of tools; relevance of different tools for specific evidence-gathering opportunities

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment must address the scope of this unit and reflect all components of the unit. Arange of appropriate assessment methods and evidence-gathering techniques must be used to determine competency. A judgement of competency should only be made when the assessor is confident that the required outcomes of the unit have been achieved and that consistent performance has been demonstrated.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to:
	• plan and organise the assessment process on a minimum of two occasions
	• collect evidence that demonstrates:
	  • documented assessment plans
	  • having covered a range of assessment events
	  • catering for a number of candidates
	  • different competency standards or accredited curricula
	  • an RPL assessment
	  • contextualisation of competency standards and the selected assessment tools, where required
	  • incorporation of reasonable adjustment strategies
	  • development of simple assessment instruments for use in the process
	  • organisational arrangements.

Context of and specific resources for assessment	Evidence must be gathered in the workplace wherever possible. Where no workplace is available, a simulated workplace must be provided. Assessment must ensure access to training products, such as training packages and accredited course documentation.
Method of assessment	
Guidance information for assessment	For further information about assessment of this and other TAE units, refer to relevant implementation guidance published on the IBSA website (www.ibsa.org.au).

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Purposes of assessment*/ *RPL may include:	• recognising current existing competence of candidates • determining if competence has been achieved following learning • establishing candidate progress towards achievement of competence • determining language, literacy and numeracy needs of candidates • certifying competence through a qualification or Statement of Attainment • licensing or regulatory requirements.

Context of assessment*/ *RPL may include:	• environment in which the assessment/RPL will be carried out, including real or simulated workplace
	• opportunities for collecting evidence in a number of situations
	• relationships between competency standards and:
	  • evidence to support RPL
	  • work activities in the candidate's workplace
	  • learning activities
	• who carries out the assessment/RPL.

Organisational*, *legal and ethical requirements may include:	• assessment system policies and procedures • assessment strategy requirements • reporting, recording and retrieval systems for assessment, including RPL • quality assurance systems • business and performance plans • access and equity policies and procedures • collaborative and partnership arrangements • defined resource parameters • mutual recognition arrangements • industrial relations systems and processes, awards, and enterprise agreements • Australian Quality Training Framework

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RANGE STATEMENT	

	• registration scope
	• human resources policies and procedures
	• legal requirements, including:
	  • anti-discrimination
	  • equal employment opportunity
	  • job role, responsibilities and conditions
	• relevant industry codes of practice
	• confidentiality and privacy requirements
	• OHS considerations, including:
	  • ensuring OHS requirements are adhered to during the assessment process
	  • identifying and reporting OHS hazards and concerns to relevant personnel.

Benchmarks for assessment/RPL may include:	• criterion against which the candidate is assessed or prior learning recognised, which may be:
	  • competency standard/unit of competency
	  • assessment criteria of course curricula
	  • performance specifications of an enterprise or industry
	  • product specifications.

Types of evidence may include:	• direct • indirect • supplementary.
Rules of evidence ensure that evidence collected is:	• valid • sufficient • authentic • reliable.

Assessment methods are the particular techniques used to gather evidence and may include:	• direct observation, for example:
	  • real work/real time activities at the workplace
	  • work activities in a simulated workplace environment
	• structured activities, for example:
	  • simulation exercises and role-plays
	  • projects
	  • presentations
	  • activity sheets
	• questioning, for example:
	  • written questions, e.g. on a computer
	  • interviews

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RANGE STATEMENT	
	• self-assessment • verbal questioning • questionnaires • oral or written examinations (applicable at higher AQF levels) • portfolios of evidence, for example: • collection of work samples compiled by candidate • product with supporting documentation • historical evidence • journal or log book • information about life experience • review of products, for example: • testimonials and reports from employers and supervisors • evidence of training • authenticated prior achievements • interview with employer, supervisor, or peer.
Assessment plan may include:	• overall planning document describing: • what is to be assessed • when assessment is to take place • where assessment is to take place • how assessment is to take place.
Simple assessment instruments may include:	• instruments developed by an assessor as part of formative or summative assessment activities, including: • profiles of acceptable performance measures • templates and proformas • specific questions or activities • evidence and observation checklists • checklists for the evaluation of work samples • recognition portfolios • candidate self-assessment materials • instruments developed elsewhere that have been modified by the assessor for use with a particular client group.
Available assessment instruments may include:	• commercially available instruments • those created by others inside the registered training organisation.

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RANGE STATEMENT	
Map assessment means:	• showing a clear relationship between the evidence and the requirements of the unit.

Unit Sector(s)

Unit sector	Assessment

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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TLIA2009A Complete and check import/export documentation

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to complete and or evaluate import and export documentation, and check documentation in accordance with the requirements of Customs and related legislation and workplace procedures. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Work must be carried out in compliance with the relevant Customs and related legislation and workplace requirements concerning the completion and checking of import/export documentation.

Work is performed under some supervision generally within a team environment. Work is undertaken in a range of environments including small to large worksites in the customs broking and freight forwarding industries.

This unit is normally packaged at AQF II or above.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Identify procedures required for documentation for import/export of goods	1.1 Documents required for import/export of goods are identified 1.2 Required documents are sourced 1.3 Content requirements for each section of the documentation are applied 1.4 Timelines for completion of documents are identified and noted 1.5 Requirements for permits and other documentation (e.g. Quarantine) are identified and implications noted 1.6 Procedures for obtaining clearances including AUTHORITY TO DEAL, Delivered into Home Consumption authorisation and Export Declaration Numbers (EDN) are identified and followed in accordance with the requirements of Customs and related legislation and workplace procedures 1.7 Letters of credit are identified and implications of each noted 1.8 Assistance is sought as required in identifying required documents and to commence process of assessing or completing these documents 1.9 Lodge all documentation if required by legislation (e.g. CITES)
2 Complete documentation to meet legislative and workplace requirements	2.1 Content requirements for each section of the documentation are identified and applied in accordance with the requirements of Customs and related legislation and workplace procedures 2.2 Workplace procedures for authorisations are followed 2.3 Data entry for documents are completed 2.4 Problems arising in completing required documents are identified and assistance sought to resolve these in accordance with the requirements of Customs and related legislation and workplace procedures 2.5 Actions are taken to meet deadlines 2.6 Assistance is sought as required in completing required documents
3 Check documentation to ensure it meets legislative requirements	3.1 Documents are collated and checked before forwarding to supervisor, manager or more senior personnel for checking within designated timelines in accordance with the requirements of Customs and related legislation and workplace procedures 3.2 Declarations are checked to ensure they meet the requirements of Customs and related legislation and workplace procedures 3.3 Letters of credit are checked to ensure they meet commercial, transport and overseas requirements 3.4 Dangerous goods documentation is checked in accordance with the requirements of Customs and related legislation and workplace procedures

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ELEMENT	PERFORMANCE CRITERIA
	3.5 Any revisions to documents are finalised and rechecked by self and supervisor, manager or more senior personnel prior to lodgement
4 Lodge documentation for processing	4.1 Documents are forwarded to relevant personnel in accordance with the requirements of Customs and related legislation and workplace procedures
	4.2 Documents are filed, stored and retained in accordance with the requirements of Customs and related legislation and workplace procedures

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Australian and international standards, codes and regulations relevant to the import and export of cargo and freight
- Relevant OH&S and environmental protection procedures and guidelines
- Workplace procedures and policies for the completion of import and export documentation
- Focus of operation of work systems, equipment, management and site operating systems for completing import/export cargo and freight documentation
- Problems that may occur when completing import and export documentation and appropriate action that can be taken to resolve the problems
- The Customs Act 1901and related legislation
- Documentation requirements for the import and export of cargo and freight

Required skills:

- Communicate effectively with others when completing import and export documentation
- Read and comprehend simple statements in English
- Read and interpret instructions, procedures and labels relevant to the import and export of cargo and freight
- Complete and/or assess accuracy of import and export documentation
- Work collaboratively with others when completing import and export documentation
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems when completing and/ or assessing

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Required skills:

import and export documentation in accordance with regulatory requirements and workplace procedures

- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use relevant communications, computing and office equipment when completing import and export documentation

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of:
	  • identifying procedures required for documentation for import/export of goods
	  • completing and checking documentation and records to meet relevant Customs legislation and related legislation and workplace requirements
	  • providing customer/client service and work effectively with others
	  • selecting and using appropriate workplace colloquial and technical language and communication technologies in the workplace context

Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts
	• Resources for assessment include:
	  • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
	  • access to an appropriate range of relevant operational situations in the workplace
	• In both real and simulated environments, access is

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EVIDENCE GUIDE

	required to: • relevant and appropriate materials and equipment, and • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment	• Assessment of this unit must be undertaken by a registered training organisation
	• As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
	• Practical assessment must occur:
	  • through activities in an appropriately simulated environment at the registered training organisation, and/or
	  • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Work may be conducted in:	• a range of work environments • by day or night
Customers may be:	• internal or external
Workplaces may comprise:	• large, medium or small worksites
Work may be conducted in:	• limited or restricted spaces • exposed conditions • controlled or open environments
Cargo may include:	• goods with specialist requirements, including temperature controlled goods and dangerous goods • personal effects • consignments imported/exported by parcels post • consignments imported/exported by air freight • consignments imported/exported by sea freight • wildlife or wildlife products (living or non-living) • goods with specialist requirements, including temperature controlled goods and dangerous goods

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RANGE STATEMENT

Hazards in the work area may include exposure to:	• chemicals • dangerous or hazardous substances • movements of equipment, goods and materials
Consultative processes may involve:	• other employees and supervisors • suppliers, customers and clients • relevant authorities and institutions • management and union representatives • industrial relations and OH&S specialists • other maintenance, professional or technical staff
Communication in the work area may include:	• phone • electronic data interchange (EDI) • fax • email • internet • radio • oral, aural or signed communications
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	• company procedures • enterprise procedures • organisational procedures • established procedures
Information/documents may include:	• goods identification numbers and codes • manifests, barcodes, and container identification/serial number • relevant Customs legislation, related legislation including quarantine legislation, environment and conservation legislation and Australian and international codes of practice and regulations relevant to import/export of cargo • Australian and international standards, regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances • dangerous goods declarations and material safety data sheets (MSDSs) (where applicable) • packing declaration • timber treatment certificates • cleanliness certificate • handling instructions for cargo (especially for dangerous goods or temperature controlled goods) • commercial invoices • packing lists • air waybill (AWB) • certificates of origin

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RANGE STATEMENT

- bills of lading (B/L) or sea waybills
- certificates of marine insurance, other insurance certificates
- quarantine treatment certificate
- transportation and warehousing instructions
- permits from regulatory bodies (Australian and international)
- financial documentation
- other documents specific to goods, country of origin/destination
- operations manuals, job specifications and induction documentation
- manufacturers specifications for equipment
- workplace procedures and policies
- supplier and/or client instructions
- award, enterprise bargaining agreement, other industrial arrangements
- relevant Australian Standards and certification requirements
- quality assurance procedures
- emergency procedures

Applicable regulations and legislation may include:

- relevant Customs and related legislation, including taxation legislation
- relevant standards and codes for the import/export of cargo
- quarantine legislation
- Australian and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances, including:
  - Australian and International Dangerous Goods Codes
  - Australian Marine Orders and the International Maritime Dangerous Goods Code
  - IATA Dangerous Goods by Air regulations
  - Australian and International Explosives Codes
- workplace relations regulations
- equal opportunity legislation
- equal employment opportunity and affirmative action legislation

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Unit Sector(s)

Not Applicable

Competency Field

Competency Field A - Handling Cargo/Stock

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TLIA3002A Maintain container/cargo records

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to maintain container/cargo records in accordance with workplace requirements, including processing container and/or cargo documentation; maintaining records of container/cargo movements; monitoring container/cargo, including reefer units, and maintinaing records. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Work must be carried out in compliance with the relevant regulations and workplace requirements concerning the maintenance of container/cargo records.

Work is performed under some supervision generally within a team environment. It involves the application of workplace procedures and regulatory requirements to the maintenance of container/cargo records as part of work activities in the stevedoring, transport, distribution and allied industries.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Process container/cargo documentation	1.1 Container/cargo documentation is processed in accordance with workplace procedures and statutory authority requirements
	1.2 Movements of containers/cargo are recorded in accordance with workplace procedures and statutory authority requirements
2 Maintain records of container/cargo movements	2.1 Container/cargo records are updated each time containers/cargo are moved within the yard
	2.2 Containers/cargo are checked using markings to ensure correct identification when updating records
3 Monitor container/cargo and maintain records	3.1 Containers/cargo are monitored on a daily basis and the specified information recorded
	3.2 Problems with controlled systems on containers/cargo are reported on the appropriate forms and forwarded to the maintenance area
	3.3 Log cards on containers/cargo with controlled systems are checked on completion of monitoring and all unit or system breakdowns and/or faults are logged in the breakdown log diary in accordance with workplace procedures
	3.4 Movement of containers/cargo is monitored on a daily basis and the information recorded

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Australian and international standards, codes of practice and regulations relevant to the maintenance of container and cargo records including the Australian and International Dangerous Goods Codes
- Relevant OH&S and environmental protection procedures and guidelines
- Workplace procedures and policies for the maintenance of container and cargo records
- Focus of operation of work systems, equipment, management and site operating systems for the maintenance of container and cargo records
- Problems that may occur when maintaining container and cargo records and appropriate action that can be taken to resolve the problems
- Relevant handling and safety codes
- Site layout and location of reefer units

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REQUIRED KNOWLEDGE AND SKILLS

- The marking and numbering systems for cargo
- Relevant bond, quarantine or other legislative requirements

Required skills:

- Communicate effectively with others when maintaining container and cargo records
- Receive, acknowledge and send messages with available communications equipment
- Read and interpret instructions, procedures, information and labels relevant to the maintenance of container and cargo records
- Interpret and follow operational instructions and prioritise work when maintaining container and cargo records
- Identify cargo, container and goods, coding, ADG / IMDG markings and where applicable emergency information panels
- Work collaboratively with others when maintaining container and cargo records
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems when maintaining container and cargo records in accordance with regulatory requirements and workplace procedures
- Estimate size, shape and special requirements of loads
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying: • the underpinning knowledge and skills • relevant legislation and workplace procedures • other relevant aspects of the range statement
Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts

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EVIDENCE GUIDE

- Resources for assessment include:
  - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
  - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
  - relevant and appropriate materials and equipment, and
  - applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment

- Assessment of this unit must be undertaken by a registered training organisation
- As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
- Practical assessment must occur:
  - through activities in an appropriately simulated environment at the registered training organisation, and/or
  - in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Work may be conducted:	• in a range of work environments • by day or night
Customers may be:	• internal or external
Workplaces may comprise:	• large, medium or small worksites
Work may be conducted in:	• limited or restricted spaces • exposed conditions • controlled or open environments
Containers/cargo may include:	• goods with specialist requirements, including reefer units and containers/cargo containing temperature controlled

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RANGE STATEMENT

	goods and/or dangerous goods
Information recorded during daily monitoring of reefers may include:	• temperatures • water meter readings • any faults in the operation of the reefer
Hazards in the work area may include exposure to:	• chemicals • dangerous or hazardous substances • movements of equipment, goods, materials and vehicular traffic
Personnel in work area may include:	• workplace personnel • site visitors • contractors • official representatives
Communication in the work area may include:	• phone • fax • email • electronic data transfer (EDI) • RF systems • radio • oral, aural or signed communications
Personal protective equipment may include:	• gloves • safety headwear and footwear • safety glasses • two-way radios • protective clothing • high visibility clothing
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	• company procedures • enterprise procedures • organisational procedures • established procedures
Information/documents may include:	• goods identification numbers and codes • manifests, bar codes, and container identification/serial number • Australian and international codes of practice and regulations relevant to the maintenance of container/cargo records • Australian and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances • operations manuals, job specifications and induction documentation

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RANGE STATEMENT

- manufacturers specifications for equipment
- workplace procedures and policies
- supplier and/or client instructions
- dangerous goods declarations and material safety data sheets (where applicable)
- award, enterprise bargaining agreement, other industrial arrangements
- relevant Australian standards and certification requirements
- quality assurance procedures
- emergency procedures

Applicable regulations and legislation may include:

- relevant codes and regulations for the maintenance of container/cargo records
- Australian and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances, including:
  - Australian and International Dangerous Goods Codes
  - Australian Marine Orders and the International Maritime Dangerous Goods Code
  - IATA Dangerous Goods by Air regulations
  - Australian and International Explosives Codes
- licence, patent or copyright arrangements
- water and road use and licence arrangements
- export/import/quarantine/bond requirements
- marine orders
- relevant Australian standards and certification requirements
- relevant state/territory OH&S and environmental protection legislation
- workplace relations regulations
- workers compensation regulations

Unit Sector(s)

Not Applicable

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Competency Field

Competency Field A - Handling Cargo/Stock

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TLIC3004A Drive heavy rigid vehicle

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to drive a heavy rigid vehicle safely including systematic and efficient control of all vehicle functions, monitoring of traffic and road conditions, management of vehicle condition and performance, and effective management of hazardous situations. Assessment of this unit may be undertaken within a licensing examination conducted by, or under the authority of, the relevant state/territory Road Traffic Authority. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Driving must be carried out in compliance with the licence requirements and regulations of the relevant state/territory roads and traffic authority pertaining to heavy rigid vehicles.

Driving is performed with limited or minimum supervision, with limited accountability and responsibility for self and others in achieving the prescribed outcomes.

Driving involves the application of routine vehicle driving principles and procedures to maintain the safety and operation of a commercial heavy rigid vehicle across a variety of driving contexts.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Drive the heavy rigid vehicle	1.1 The heavy rigid vehicle is started, steered, manoeuvred, positioned and stopped in accordance with traffic regulations and manufacturers instructions
	1.2 Engine power is managed to ensure efficiency and performance and to minimise engine and gear damage
	1.3 Engine operation is maintained within the manufacturer's specified torque range and temperature through effective gear selection and smooth transition in gear changes
	1.4 Braking system of heavy rigid vehicle is managed and operated to ensure effective control of the vehicle under all conditions
	1.5 Driving hazards are identified and/or anticipated and avoided or controlled through defensive driving
	1.6 The heavy rigid vehicle is driven in reverse, maintaining visibility and achieving accurate positioning.
	1.7 The heavy rigid vehicle is parked, shut down and secured in accordance with manufacturers specifications, traffic regulations and workplace procedures
	1.8 Where required, overwidth and overweight permit applications are undertaken in accordance with relevant regulatory requirements
	1.9 Appropriate procedures are followed in the event of a driving emergency
2 Monitor traffic and road conditions	2.1 The most efficient route of travel is taken through monitoring and anticipation of traffic flows and conditions, road standards and other factors likely to cause delays or route deviations
	2.2 Traffic and road conditions are constantly monitored and acted upon to enable safe operation and ensure no injury to people or damage to property, equipment loads and facilities
3 Monitor and maintain vehicle performance	3.1 Vehicle performance is maintained through pre-operational inspections and checks of the vehicle
	3.2 Performance and efficiency of vehicle operation is monitored during use
	3.3 Defective or irregular performance or malfunctions are reported to the appropriate authority
	3.4 Vehicle records are maintained/updated and information is processed in accordance with workplace procedures

Required Skills and Knowledge

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REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Relevant road rules, regulations, permit and licence requirements of the relevant state/territory road traffic authority
- Relevant OH&S and environmental procedures and regulations
- Heavy rigid vehicle controls, instruments and indicators and their use
- Heavy rigid vehicle handling procedures
- Procedures to be followed in the event of a driving emergency
- Engine power management and safe driving strategies
- Efficient driving techniques
- Pre-operational checks carried out on heavy rigid vehicle and related action
- Differences between transmission types
- Principles of operation of air brakes and procedures for their use
- Workplace driving and operational instructions
- Driving hazards and related defensive driving techniques
- Principles of stress management when driving a vehicle
- Factors which may cause traffic delays and diversions and related action that can be taken by a driver
- Causes and effects of fatigue on drivers
- Factors which increase fatigue-related accidents
- Fatigue management strategies and on-road techniques
- Lifestyles which promote the effective long-term management of fatigue

Required skills:

- Communicate effectively with others when driving a commercial heavy rigid vehicle
- Read and interpret instructions, procedures, information and signs relevant to when the driving of a commercial heavy rigid vehicle
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to the driving of a commercial heavy rigid vehicle
- Work collaboratively with others when driving a commercial heavy rigid vehicle
- Operate electronic communication equipment to required protocol
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems, faults or malfunctions that may occur when driving a commercial heavy rigid vehicle in accordance with regulatory requirements and workplace procedures

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Required skills:

- Implement contingency plans for unexpected events
- Apply precautions and required action to minimise, control or eliminate hazards that may exist when driving a commercial heavy rigid vehicle
- Monitor and anticipate traffic hazards and take appropriate action
- Modify activities depending on differing operational contingencies, risk situations and environments
- Apply fatigue management knowledge and techniques
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use required personal protective equipment conforming to industry and OH&S standards
- Monitor performance of the vehicle and its equipment and take appropriate action where required
- Carry out pre-operational checks in the course of work activities

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying: • the underpinning knowledge and skills • relevant legislation and workplace procedures • other relevant aspects of the range statement
Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts • Resources for assessment include: • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or • access to an appropriate range of relevant operational

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EVIDENCE GUIDE

	situations in the workplace
	• In both real and simulated environments, access is required to:
	  • relevant and appropriate materials and equipment, and
	  • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment	• Assessment of this unit must be undertaken by a registered training organisation
	• As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
	• Practical assessment must occur:
	  • through activities in an appropriately simulated environment at the registered training organisation, and/or
	  • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Type of vehicle includes:	• all heavy rigid vehicles, for example any rigid vehicle with 3 or more axles, including trucks or buses, greater than 8 tonnes GVM
Driving may be carried out in typical road transport situations, including:	• operations conducted at day or night • typical weather conditions • on the open road • on a private road • while at a depot, base or warehouse • while at a client's workplace or work site
Vehicle handling procedures may include:	• starting a vehicle • steering and manoeuvring a vehicle • accelerating and braking • positioning and stopping a vehicle • reversing a vehicle • operating vehicle controls, instruments and indicators

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RANGE STATEMENT

	• using air brakes • using defensive driving techniques • managing engine performance
Pre-operational checks may include:	• visual check of vehicle • checking and topping up of fluid levels • checks of tyre pressures • checks of operation of vehicle lights and indicators • checks of brakes
Minor routine repairs may include:	• replacement of blown globes in vehicle lights • replacement of broken fan belt • replacement of blown fuse • replacement of door mirrors • repairs to rear tail-light lens • changing of tyres • repair of tyre punctures • replacement of broken coolant hose
Driving hazards may include (examples only):	• wet and iced roads • oil on road • animals and objects on road • fire in vehicle • leaking fuel • faulty brakes • parked vehicles on the road • faulty steering mechanism on vehicle • pedestrians crossing the road • flooded sections of road • windy sections of road • foggy conditions • work site hazards including power and service lines, buildings, structures, facilities, underground services, uneven or unstable ground and recently filled trenches, stationary and moving machinery and equipment, hazardous or dangerous materials, noise, light, energy sources, and obstructions
Factors that can cause traffic delays and diversions may include:	• traffic accidents • flooded sections of road • road damage • bridge/tunnel damage • road works • building construction • emergency situations such as bushfires, building fires, etc.

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RANGE STATEMENT

	• road closures for special events such as marches, parades, sporting events, etc. • holiday traffic • road closures for utility works such as electricity, water, sewerage, telecommunications, gas, etc.
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	• company procedures • enterprise procedures • organisational procedures • established procedures
Documentation/records may include:	• state/territory heavy rigid vehicle driving licence and permit requirements • state/territory road rules • workplace driving instructions and procedures • vehicle manufacturers instructions, specifications and recommended driving procedures including preoperational checks of vehicle • emergency procedures • vehicle log book or record book (where required) • relevant standards and certification requirements • quality assurance procedures
Applicable procedures and codes may include:	• relevant state/territory roads and traffic authority driving regulations and licence/permit requirements pertaining to heavy rigid vehicles • relevant state/territory road rules • relevant state/territory permit regulations and requirements • relevant state/territory OH&S legislation • relevant state/territory fatigue management regulations • relevant state/territory environmental protection legislation

Unit Sector(s)

Not Applicable

Competency Field

Competency Field C - Vehicle Operation

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TLID2022A Conduct weighbridge operations

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to conduct weighbridge operations in accordance with regulatory requirements and workplace procedures, including setting up for weighbridge operations, weighing loaded vehicles, weighing unloaded vehicles, finalising weighbridge operations, and completing required records and documentation. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Work must be carried out in accordance with regulations and workplace requirements relevant to weighbridge operations.

Work is performed under some supervision, generally within a team environment.

Work involves the application of regulatory requirements and workplace procedures when conducting weighbridge operations in the transport, warehousing, distribution and/or storage industries.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Set up for weighbridge operations	1.1 Weighbridge systems, including equipment, computer and recording arrangements are checked for operational status
	1.2 Tests to confirm accuracy of weighbridge operation and related functions are conducted in accordance with workplace procedures, manufacturers instructions and relevant legislation
	1.3 Accurate reporting of the results of the inspection and testing is kept in accordance with statutory requirements, workplace policy and industry guidelines
	1.4 Faults/discrepancies in weighbridge operation are identified and action is undertaken in accordance with workplace procedures
2 Weigh loaded vehicles	2.1 Vehicles likely to exceed weighbridge weight limit are turned away
	2.2 Vehicles are directed onto platform to obtain accurate weight
	2.3 Weight of loaded stationary vehicle is registered against vehicle and load identification
	2.4 Vehicle and load information is entered into workplace recording system and driver is issued with receipt and/or statement
	2.5 Areas of dispute are resolved or forwarded for further action undertaken in accordance with workplace procedures
3 Weigh unloaded vehicles	3.1 Vehicles are directed onto platform to obtain accurate weight
	3.2 Weight of unloaded stationary vehicle is registered against vehicle
	3.3 Proposed load weight is assessed for conformance to statutory requirements
	3.4 Where appropriate, loading operations are commenced in accordance with legal loading weight, customer requirements and workplace procedures with vehicle re-weighed to establish final load weight
	3.5 Vehicle and load information is entered into workplace recording system and invoice is issued to driver where appropriate
	3.6 Driver signatures on weighbridge documents, invoices or receipts are obtained in accordance with statutory and workplace requirements
	3.7 Areas of dispute are resolved or forwarded for further action to be undertaken in accordance with workplace procedures
4 Complete weighbridge operations	4.1 Weighbridge systems, including equipment, computer and recording arrangements are secured or made ready for next shift
	4.2 Record of operations is maintained and filed in accordance with

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ELEMENT	PERFORMANCE CRITERIA
	workplace procedures and statutory requirements

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Regulations relevant to the conduct of weighbridge operations including Australian Dangerous Goods Code where applicable
- Relevant OH&S and environmental protection procedures and guidelines
- Workplace procedures and policies for the conduct of weighbridge operations
- Problems that may occur when conducting weighbridge operations and appropriate action that can be taken to resolve the problems
- Equipment applications, capacities, configurations, safety hazards and control mechanisms
- Records and documentation requirements for weighbridge operations
- Classification procedures
- Despatch procedures
- Calculation method and approaches for both metric and imperial systems
- Correct weighing procedures including statutory and workplace requirements
- Emergency response procedures
- Site layout

Required skills:

- Communicate effectively with others when conducting weighbridge operations
- Read and interpret instructions, procedures and information relevant to the conduct of weighbridge operations
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to the conduct of weighbridge operations
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when conducting weighbridge operations
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems, errors or malfunctions that may occur when conducting weighbridge operations in accordance with regulatory requirements and workplace procedures

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Required skills:

- Apply precautions and required action to minimise, control or eliminate hazards that may exist during the conduct of weighbridge operations
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use required personal protective equipment conforming to industry and OH&S standards
- Set up and maintain weighbridge equipment
- Identify, select and efficiently and effectively use weighbridge equipment
- Monitor performance of weighbridge equipment

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
	  • the underpinning knowledge and skills
	  • relevant legislation and workplace procedures
	  • other relevant aspects of the range statement

Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts
	• Resources for assessment include:
	  • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
	  • access to an appropriate range of relevant operational situations in the workplace
	• In both real and simulated environments, access is required to:

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EVIDENCE GUIDE

	• relevant and appropriate materials and equipment, and • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment	• Assessment of this unit must be undertaken by a registered training organisation
	• As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
	• Practical assessment must occur:
	  • through activities in an appropriately simulated environment at the registered training organisation, and/or
	  • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Work may be conducted:	• in a range of work environments • by day or night
Customers may be:	• internal or external
Workplaces may comprise:	• large, medium or small worksites
Workplace environment may include:	• movement of equipment, goods, products, materials and vehicular traffic
Weighbridge operations may be:	• inclusive of a single operation involving the loading of vehicles and despatch functions
Weighbridge operation may be:	• electro/mechanical • electronic • computerised
Vehicles may include	• trucks • articulated road vehicles • trailers • wagons
Calibration and/or testing of	• required prior to and during operations

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RANGE STATEMENT

equipment may be:

Hazards in the work area may include exposure to:	• chemicals and pesticides • dangerous or hazardous substances • stationary and moving equipment, parts and materials • noise, light, energy sources • electrical equipment • humidity, air temperature, radiant heat • faulty equipment
Personal protective equipment may include:	• gloves • safety headwear and footwear • safety glasses • two-way radios • protective clothing • respirators and fume/dust masks • high visibility clothing
Requirements for work may include:	• site restrictions and procedures • use of safety and personal protective equipment • communications/recording equipment • authorities and permits • breakdown procedures • emergency procedures
Communication in the work area may include:	• phone • fax • email/internet • electronic data interchange (EDI) • RF systems • oral, aural or signed communications
Consultative processes may involve:	• workplace personnel • supervisors and managers • existing and potential customers/clients • drivers • suppliers and contractors • union representatives • industrial relations and OH&S specialists • maintenance, professional or technical staff
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	• company procedures • workplace procedures • organisational procedures • established or standard procedures

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RANGE STATEMENT

Information/documents may include:	• operations manuals, job specifications and procedures • induction documentation • competency standards and training materials • manufacturers specifications and instructions for the operation of weighbridge equipment • material safety data sheets • workplace operating procedures and policies • supplier and/or client instructions • Australian and international standards, criteria and certification requirements • codes of practice including the National Standards for Manual Handling and the Industry Safety Code • relevant regulations including the ADG Code • award, workplace bargaining agreement, other industrial arrangements • OH&S procedures • quality assurance procedures • emergency procedures
Applicable regulations and legislation may include:	• relevant codes and regulations pertaining to weighbridge operations • traffic acts and road transport mass and loading regulations • ADG Code and regulations pertaining to the storage and handling of dangerous and hazardous goods • relevant state/territory OH&S legislation • relevant state/territory environmental protection legislation • relevant Australian and international standards and certification requirements • workplace relations regulations including equal opportunity, equal employment opportunity and affirmative action legislation • workers compensation regulations

Unit Sector(s)

Not Applicable

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Competency Field

Competency Field D - Load Handling

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TLID3011A Conduct specialised forklift operations

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to operate a forklift with specialised attachments or all-terrain equipment, including checking attachments and worksite for suitability, selecting the type of forklift and accessories for required load shifting tasks, and shifting load and completing work in accordance with operational requirements. Assessment of this unit will usually be undertaken within a licensing examination conducted by, or under the authority of, the relevant state/territory OH&S authority. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Specialised operation of a forklift must be carried out in compliance with the licence requirements and regulations of the relevant state/territory authority.

Specialised operation of a forklift is performed under some supervision, generally within a team environment. It involves the application of equipment operation principles and procedures to maintain the safety and specialised operation of a forklift in a wide variety of operational contexts.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Check attachments and worksite for suitability	1.1 Suitable work site is selected for operations 1.2 Work area is checked for overhead obstructions and proximity to service delivery lines 1.3 Barriers or warning signs are erected in areas subject to passing traffic 1.4 Attachments and platforms are securely fixed to carriage or tines 1.5 Personnel support platforms are inspected to ensure compliance with the relevant Australian Standard
2 Select type of forklift and accessories for the required workplace task	2.1 Special equipment, accessories or attachments are identified to match load characteristics and work requirements 2.2 Appropriate specialised equipment is selected 2.3 Existing attachments are removed and stored according to workplace procedures 2.4 Specialised equipment is fitted according to manufacturers instructions and workplace procedures 2.5 Designated staff are notified regarding specialist operations
3 Shift load and complete work	3.1 Equipment is operated within safe working limits and to maximise efficiency of operations 3.2 Load is lifted, carried and set down in accordance with workplace and manufacturers procedures and regulatory requirements 3.3 Documentation is completed reporting any damage or faults to goods or equipment 3.4 Specialist equipment and forklift are returned to appropriate storage/parking area

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Relevant duty of care requirements pertaining to the specialised operation of a forklift
- Relevant OH&S and environmental procedures and regulations
- Workplace operating procedures

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REQUIRED KNOWLEDGE AND SKILLS

- Forklift controls, instruments and indicators and their use
- Types of forklift accessories and ancillary equipment, their purposes and procedures for their use
- Handling procedures for forklifts involved in specialised operations
- Procedures to be followed in the event of an operational emergency
- Operating hazards and related defensive driving and hazard control techniques
- Engine power management and safe operating strategies
- Efficient driving techniques
- Pre-operational checks carried out on forklift and accessories and related action
- Site layout and obstacles
- Principles of stress management when driving a forklift

Required skills:

- Communicate effectively with others when conducting specialised forklift operations
- Read and interpret instructions, procedures, information and signs relevant to specialised forklift operations
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to specialised forklift operations
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when conducting specialised forklift operations
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems, faults or malfunctions that may arise when conducting specialised forklift operations in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events that may occur when conducting specialised forklift operations
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during specialised forklift operations
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Apply fatigue management knowledge and techniques
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use required personal protective equipment conforming to industry and OH&S

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Required skills:

standards

- Identify points of balance and safe lifting positions on a range of loads when operating a forklift (including accessories)
- Monitor performance of equipment
- Service equipment in terms of maintenance schedule and standard operating procedures
- Check and replenish fluids and carry out lubrication processes in the course of work activities

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
	  • the underpinning knowledge and skills
	  • relevant legislation and workplace procedures
	  • other relevant aspects of the range statement

Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts
	• Resources for assessment include:
	  • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
	  • access to an appropriate range of relevant operational situations in the workplace
	• In both real and simulated environments, access is required to:
	  • relevant and appropriate materials and equipment, and
	  • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment	• Assessment of this unit must be undertaken by a registered training organisation • As a minimum, assessment of knowledge must be

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EVIDENCE GUIDE

conducted through appropriate written/oral tests

- Practical assessment must occur:
  - through activities in an appropriately simulated environment at the registered training organisation, and/or
  - in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Types of forklift may include:	• counterbalance trucks • reach trucks • pallet trucks • container-handling heavy forklifts • vacuum • top frame
Specialised forklift operations may be carried out in typical forklift operational situations, including:	• operations conducted at day or night • typical weather conditions • on the open road • on a private road or worksite • while at a workplace
Customers may be:	• internal or external
Workplaces may comprise:	• large, medium or small worksites
Specialised forklift may be used to assist in a range of workplace tasks, including:	• stock/goods/container handling • loading and unloading vehicles • stacking stock and goods • lifting and moving equipment • transporting materials and goods in a workplace
Work may be conducted in:	• restricted spaces • exposed conditions • controlled or open environments
Loads to be shifted may require:	• special precautions
Specialised forklift operations	• spikes

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RANGE STATEMENT

may involve the use of a range of attachments and accessories, including:	• drum carriers • bale carriers • tines • personnel carriers • high reaching • pantograph • jibs • paper clamps • hooks • side lifters
Loads to be shifted may be:	• irregularly shaped • packaged or unpackaged • labelled or unlabelled • palleted or unpalleted • containerised
Personnel in the work area may include:	• workplace personnel • site visitors • contractors • official representatives
Forklift operational procedures may include:	• starting a forklift (including pre-start checks) • steering and manoeuvring a forklift • accelerating and braking • positioning and stopping a forklift • reversing a forklift • operating forklift controls, instruments and indicators • using defensive driving techniques • managing engine performance
Pre-operational checks may include but are not limited to:	• visual checking of forklift and its associated accessories and equipment • checking and topping up of fluid levels • checks of tyres • checks of operation of forklift lights and indicators • checks of brakes
Post-operational checks may include but are not limited to:	• parking in a safe place • shutting down forklift • lowering all equipment • visually checking for faults or damage
Hazards may include (examples only):	• wet and iced operating surfaces • oil on operating surface • faulty brakes

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RANGE STATEMENT

	• workplace obstacles and other operational equipment and vehicles • damaged loads and pallets • other personnel in work area
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	• company procedures • enterprise procedures • organisational procedures • established procedures
Personal protective equipment may include:	• gloves • safety headwear and footwear • safety glasses • two-way radios • high visibility clothing
Information/documents may include:	• goods identification numbers and codes, including IMDG markings and HAZCHEM signs • manifests, bar codes, picking slips, merchandise transfers, stock requisitions, goods and container identification • Australian Standard 2359 - Industrial Truck Code • manufacturers specifications for forklift and associated accessories and equipment • operations and service record book or log • workplace procedures and policies for the operation of forklifts • supplier and/or client instructions • material safety data sheets • regulatory requirements concerning the use of forklifts • award, enterprise bargaining agreement, other industrial arrangements • standards and certification requirements • quality assurance procedures • emergency procedures
Applicable procedures and codes may include:	• relevant state/territory regulations pertaining to the operation of forklifts • relevant codes and standards, including Australian Standard 2359 - Industrial Truck Code • relevant state/territory OH&S legislation • relevant state/territory fatigue management regulations • relevant state/territory environmental protection legislation

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Unit Sector(s)

Not Applicable

Competency Field

Competency Field D - Load Handling

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UEGNSG202B Construct and lay distribution pipelines and services

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This Competency Standard Unit covers the construction and laying of distribution pipelines. The competency standard unit also covers connecting and disconnecting services in a utilities industry workplace, handling, transporting and connecting meters and conducting appliance relights. This competency standard refers to the relevant services; appropriate persons; the relevant materials required to lay distribution pipelines; tools and equipment; safe working procedures and the relevant legislative requirements.

Application of the Unit

Application of the Unit

2)

This competency standard shall apply to any basic and safe work site where Gas Industry operations occur. It could also apply, where applicable to other workplaces in the electricity supply industry (transmission and distribution and generation), the electrotechnology industry and the water industry, subject to all Occupational Health and Safety and duty of care requirements being met for the workplace.

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Licensing/Regulatory Information

License to practice **3)**

The skills and knowledge described in this unit are not subject to licence regulation other than those directly related to Occupational Health and Safety, gas/electricity/water industry safety and compliance, industrial relations, environmental protection, telecommunications, anti discrimination and training. Commonwealth, State/Territory or Local Government legislation and regulations may exist that limits the age of those who can operate certain equipment.

Pre-Requisites

Prerequisite Unit(s) **4)**

Competencies **4.1)**

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed:

Nil

Literacy and numeracy skills **4.2)**

Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading	3	Writing	3	Numeracy	3

Employability Skills Information

Employability Skills **5)**

This unit contains Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability

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Employability Skills	**5)** Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA	
1 Prepare for the laying of a distribution pipeline and the connecting and disconnecting services	1.1	Plans, specifications and work instructions are received and confirmed
	1.2	Alignment of main and services and other relevant requirements are defined and established procedures are followed and the work to be performed is discussed with all persons to establish and confirm the work schedule
	1.3	OHS, environmental and sustainable energy policies and procedures to be followed for the work to be performed are received and confirmed
	1.4	Suggestions to assist with the laying of distribution pipelines and services work are made to others involved in the work
	1.5	Hazards are identified, OHS risks assessed and control measures are prioritised, implemented and monitored including emergency exits kept clear according to established procedures

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ELEMENT		PERFORMANCE CRITERIA	
		1.6	Scope of responsibility under the relevant work permit is received and confirmed according to requirements and established procedures with relevant persons
		1.7	Resources and materials including, appropriately qualified persons, equipment, tools and personal protective equipment required for the job are obtained and in working order according to established procedures
		1.8	Relevant responsibilities associated with First Aid and other related work safety procedures at the worksite are confirmed in accordance with requirements and established procedures to ensure safety measures are followed in the event of an incident
		1.9	Client issues are referred to appropriate persons in accordance with industry and community standards
		1.10	Site is prepared according to given instructions and the work schedule to ensure a quality outcome and to minimise risk and damage to property, commerce and individuals in accordance with established procedures
		1.11	Road signs, barriers and warning devices are positioned in accordance with given instructions and requirements including traffic management plans
2	Carry out the construction of a distribution pipeline and connecting and disconnecting services	2.1	OHS policies and procedures and safe work practices are followed to eliminate or minimise incidents and hazards
		2.2	Lifting, climbing, working in confined spaces, excavations, trenches or aloft, and use of power tools, techniques and practices are safely followed in accordance with given instructions and according to requirements confirmed to minimise OHS risks

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ELEMENT	PERFORMANCE CRITERIA	
	2.3	Operational knowledge for carrying out construction work is confirmed to ensure completion in an agreed timeframe and to quality standards with a minimum of waste according to requirements and established procedures
	2.4	Construction work is performed in accordance with given instructions and established procedures
	2.5	Hazard warnings and safety signs are recognised and hazards are assessed and OHS risks are reported to the authorised persons for directions according to established procedures
	2.6	Non-routine events are referred to the authorised persons for directions according to established procedures
	2.7	Problems associated with the construction of a distribution pipeline and services are dealt with using acquired known solutions and skills related to routine procedures to ensure work instructions and established procedures are met
	2.8	Services are installed, tested and commissioned in accordance with procedures
	2.9	Services are disconnected and terminated temporarily or permanently in accordance with procedures
	2.10	Appliances are lit in accordance with manufacturer’s instructions
	2.11	Ongoing checks of work quality are undertaken in accordance with given instructions and established procedures
3 Complete the construction of a distribution pipeline and connecting and disconnecting services	3.1	Work undertaken is checked against work schedule and anomalies reported to authorised persons in accordance with established procedures
	3.2	Accidents and incidents are actioned and

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ELEMENT	PERFORMANCE CRITERIA	
		reported to authorised persons in accordance with established procedures
	3.3	Work site is rehabilitated, cleaned up and made safe in accordance with given instructions and established procedures
	3.4	Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures
	3.5	Appropriate persons are notified of work completion according to established procedures
	3.6	Work completion records, report forms and data sheets are completed accurately in accordance with given instructions and established procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices for constructing and laying distribution pipelines.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-G202B Distribution pipeline construction and lay

G 2.1.1 Work in the gas sector

Evidence shall show an understanding of how work is conducted in the Gas Industry, specifically:

- The Gas Industry in Australia
- Australian gas resources
- Types of gas and uses

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- Combustion.

G 2.1.2 Identify roles of statutory authorities

Evidence shall show an understanding of the roles of statutory authorities (government agencies, both State and Federal) that operate in the Gas Industry, including identifying:

- Statutory bodies
- Roles of statutory bodies
- Employer and employee responsibilities to statutory bodies.

G 2.1.3 Identify employment roles and responsibilities

Evidence shall show an understanding of the roles of major groups in the Gas Industry, that is employers and employees, including:

- The role of the employer
- Industry associations
- Employer obligations to safety
- Identification of disadvantaged and minority groups in Australian society
- Employers obligations to persons from disadvantaged and minority groups
- Employers obligations to occupational health and safety
- The role of commonwealth and state training regulatory authorities and industry skills councils and state training advisory bodies
- Roles and responsibilities of gas industry employees
- The employment contract
- Working to safety requirements
- Work according to lawful commands
- Belonging to employee organisations
- How to work with people from disadvantaged and minority groups
- Understanding the employees obligations to occupational health and safety
- Sources of support.

G 2.1.4 Apply relevant OHS regulations, policies and procedures

Evidence shall show an understanding of the basic workplace health and safety legislation and how this applies to individuals in a Gas Industry workplace, indicated by the following:

- Employer's responsibilities to relevant OHS legislation

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- Employee's responsibilities to OHS legislation and organisation's policies and procedures
- OHS policies and procedures at the worksite.
- Australian Standards, guidelines and codes of practice

G 2.1.5 Work safely in the gas industry by reducing risk and using correct PPE

Evidence shall show an understanding of how to work safely in the gas industry indicated by the ability to:

- Correctly interpret and comply with Safety Signs including workplace Hazards, Warnings and PPE requirements
- Correctly interpret gas markers
- Identify the correct PPE required for work in the Gas Industry
- Locate and comply with procedures for correctly checking, maintaining and storing PPE
- Apply the process of Hazard identification, Risk assessment and Control
- Complete Risk Assessment forms such as Work Permits and JHA’s, JSA’s, JSEA’s, SWM’s etc
- Report workplace hazards

G 2.1.6 Work safely with hazardous materials and equipment

Evidence shall show an understanding of what constitutes hazardous materials and the equipment and processes used to safely work with these indicated by the following:

- Identify hazardous materials and equipment
- Location and purpose of Material Safety Data Sheets (MSDS)
- Read, interpret and discuss MSDS
- Knowledge of methods for safe disposal of hazardous waste materials
- Read, interpret and discuss relevant manufacturer's specifications
- Use and dispose of hazardous materials and equipment safely
- Use of spill kits and PPE

G 2.1.7 Apply safe manual handling techniques in the workplace

Evidence shall show an understanding of manual handling and how to apply this knowledge to handling heavy and awkward objects in a Gas Industry workplace, specifically:

- Principles for managing manual handling
- Characteristics and types of safe manual handling

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- Safe manual handling techniques
- Manual handling and risk management

G 2.1.8 Control traffic at the worksite

Evidence shall show knowledge and skills in coordinating traffic flow at a workplace where traffic control is required, that is, where work is conducted on or near a road, indicated by the following:

- Read and interpret relevant traffic authority regulations for traffic control at a worksite
- Identify signs and devices required to control pedestrians and traffic at a worksite depending on traffic flow volumes
- Apply techniques for controlling pedestrians and traffic at various worksites
- Use procedures for monitoring traffic controls
- Set up and monitor pedestrian and traffic controls

G 2.1.9 Respond to emergency and accident situations

Evidence shall show knowledge and skills in dealing with emergency or accident situations at a Gas Industry workplace, indicated by the following:

- Situations of accidents and emergency
- Comply with procedures for accidents and incidents
- Correct use of emergency equipment and procedures for a fire
- Correct use of breathing apparatus
- Correct use of gas detectors/oxygen monitoring devices
- Correct use of emergency equipment and procedures for a gas leak or vapour emission
- Report emergencies and accidents

G 2.1.14 Read and interpret Gas Industry documents

Evidence shall show an ability to read and interpret Gas Industry documents indicated by the following:

- Understand and use signs, symbols terminology and legends as used in gas industry procedures and documents
- Identify, locate and implement gas industry standards, policies and procedures
- Interpret and read basic drawings and diagrams

G 2.1.15 Complete workplace forms, and reports

Evidence shall show an ability to complete routine Gas Industry forms, memos and reports either written or

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electronic, indicated by the following:

- Identify, locate, interpret and use workplace forms, and reports
- Enter the required information accurately on gas industry forms and reports

G 2.1.16 Identify requirements of work activity

Evidence shall show ability to:

- Clarify expected outcomes of a work activity in a Gas Industry workplace
- Receive, clarify and respond to verbal work instructions for work activity
- Interpret and discuss an organisation's policies, quality requirements and specifications for work activity

G 2.1.17 Apply basic planning skills

Evidence shall show a demonstrated ability to apply basic planning skills in a Gas Industry workplace, indicated by the following:

- Develop checklists of tasks
- Prioritise tasks
- Identify resources required to complete tasks safely and efficiently
- Identify resource or scheduling conflicts and apply solutions
- Develop time lines to complete tasks

G 2.1.18 Conduct tasks to complete work

Evidence shall show ability to organise the activities to complete a job in a Gas Industry workplace, indicated by the following:

- Locate and organise equipment, tools and machinery required to complete tasks safely and efficiently
- Complete tasks according to planned sequences and within appropriate timeframes
- Understand quality assurance and work according to established and standard operating procedures

G 2.1.19 Review work activities

Evidence shall show an ability to review work activities undertaken in a Gas Industry workplace, indicated by the following:

- Check work activities against a work plan
- Seek feedback on the outcome of work activities with

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appropriate persons

- Report outcomes of work activities in writing or orally according to enterprise procedures

G 2.1.20 Customer relations

Evidence shall show an understanding of the requirements for providing good customer relations to Gas Industry stakeholders, indicated by the following:

- Notify stakeholders of activities
- Communicate with stakeholders within scope of responsibilities
- Refer stakeholders to appropriate parties
- Demonstrate understanding of ring fencing requirements (if applicable)
- Keep the customer informed on job progress
- Provide good customer relations

G 2.1.21 Undertake problem solving

Evidence shall show an understanding of the requirements to undertake basic problem solving in a Gas Industry workplace, indicated by the following:

- Demonstrate problem solving and diagnostics methodology
- Identify possible solutions
- Recommend probable solutions and
- Apply basic problem solving techniques

G 2.1.22 Operate in confined spaces

Evidence shall show an understanding of the requirements to recognise and operate in confined spaces in a Gas Industry workplace, indicated by the following:

- Knowledge of the requirements of Legislation, Regulations, Australian Standards and enterprise specific procedures for safe working in confined spaces
- Ability to recognise what a confined space is and the entry safety requirements
- Ability to understand and comply with manufacturers' guidelines for the safe use of PPE used in confined spaces
- Understand how and when to use gas detectors for confined spaces entry
- Understand how and when to use breathing apparatus and rescue and recovery equipment

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Note: A confined spaces entry ticket would satisfy and exceed the requirements of this EKAS clause

G 2.1.25 Protect the environment

Evidence shall show an understanding and ability to perform work in the gas industry in a manner that protects the environment indicated by the following:

- Understanding of the relevant Commonwealth/State/Territory environmental legislation, regulations and codes of practice
- Understanding of employee's and employer's responsibilities to relevant environmental legislation, regulations and codes
  - Understanding and compliance with enterprise procedures for flora control
  - erosion control
  - fauna control
  - the protection of indigenous and cultural heritage sites
- Understanding the role of regulatory bodies in monitoring environmental activities, risk and incident compliance
- Understanding community expectations for protecting the environment
- Correct use of environment protection procedures, records, inspections and incident reporting
- Identifying environmental hazards
- Assessing environmental risks
- Implementing environmental control measures
- Ability to respond to workplace environmental incidents

Note: Environmental damage can be caused by chemicals, oil, water contamination, carcinogenic agents, gases, dusts, waste contamination and noise

G 2.1.26 Communicate in the workplace

Evidence shall show an understanding and ability to communicate effectively in a Gas Industry work team indicated by the following:

- Effective use oral and written communications methods to achieve work related outcomes and solutions.
- Effectively receive, interpret and respond to workplace information and instructions

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- Effectively convey and report work related information to fellow workers and customers
- Interact with fellow workers in a socially and culturally appropriate manner

AND one or more of the following depending on pipe type:

If undertaking the laying of nylon pipe and PE pipe

G 2.2.12 Identify nylon or PVC pipeline, fittings and accessories

Evidence shall show an ability to identify the pipeline, fittings and accessories for nylon pipelines on a Gas Industry workplace, including:

- Characteristics of nylon or PVC pipeline, fittings and accessories
- Nylon or PVC pipe sizes, range of fitting and accessories.
- Situations in which a nylon or PVC pipeline is used
- Appropriate selection of transition fittings and adaptors to other materials
- Benefits of using a nylon or PVC pipeline
- Material cost versus Installation savings
- Differentiate nylon or PVC from other materials
- Awareness of solvent properties and benefits of current solvent over earlier versions
- Read and interpret MSDS applying appropriate measures

G 2.2.13 Join nylon or PVC pipeline and fittings

Evidence shall show an ability to join nylon or PVC pipes and fittings for a nylon or PVC pipeline on a Gas Industry workplace, indicated by the following:

- Selection and use of equipment, tools and materials required for joining nylon or PVC pipe, pipeline and fittings
- Demonstrate function and use of equipment, tools and materials
- Follow safety requirements and procedures for cutting and joining nylon or PVC pipe
- Undertake cutting and tapping procedures for nylon or PVC pipe using a variety of methods
- Pressure testing procedures
- Understand jointing requirements under various conditions, inclement weather etc
- Demonstrate procedures and safety requirements for joining nylon or PVC pipe to other pipelines

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G 2.2.15 Determine depth of nylon or PVC pipeline in ground

Evidence shall show an ability to determine the depth at which a pipe should be inserted in the ground for a gas distribution pipeline in a Gas Industry workplace, specifically:

- Identify depth of cover required for nylon or PVC pipeline in various locations
- Identify obstacles affecting minimum depth of cover for pipeline
- Develop solutions for dealing with obstacles affecting the depth of cover including transitioning to other approved materials and applying protection.

G 2.2.16 Install nylon or PVC pipe

Evidence shall show an understanding of the requirements to install nylon or PVC on Gas Industry pipelines, including:

- Application of Australian Standards and Gas Industry standards for installing nylon or PVC pipeline
- Conditions for direct installation or insertion of pipeline
- Procedures for installing nylon or PVC pipeline, trace wire and marker tape
- Procedures for terminating nylon or PVC pipeline
- Understand the procedures for installation of nylon or PVC pipeline under various conditions
- Static Electricity in gas pipes

G 2.2.17 Install PE pipeline, fittings and accessories

Evidence shall show an ability to install polyethylene pipelines, fittings and accessories in a Gas Industry workplace, including an understanding of:

- Differentiate PE from other materials
- Situations in which a PE pipeline is used
- Advantages and disadvantages of using a PE pipeline
- Suppliers specifications
- Appropriate selection of transition fittings and adaptors to other materials
- Various couplings & service connection tees
- Characteristics of PE HP, MP and LP pipeline, fittings and accessories
- Dimensions for series 2 pipe - Gas (SDR) from AS/NZS 4130
- PE pipe sizes, range of fitting and accessories eg differences between PE80 and PE100
- Allowable pipe damage

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- Static Electricity in gas PE pipes
- Procedures for installing (including insertion, drilling and open cut method) PE pipeline, trace wire and marker tape
- Read and interpret MSDS applying appropriate measures

G 2.2.18 Join PE pipes and fittings

Evidence shall show an understanding of the requirements to join PE pipes and fittings for Gas Industry pipelines, indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Correct manual handling techniques
- Electrofusion safety requirements eg working in the rain
- Selection, purpose and use of equipment, tools and materials required for joining PE pipe, pipeline and fittings
- Pipe preparation
- Follow safety requirements and procedures for cutting and joining PE pipe
- Demonstrate function and use of equipment, tools and materials
  - Butt Fusion equipment small & Large
  - Saddle fusion equipment
  - Electro fusion equipment
  - Socket Fusion equipment
- Procedures for joining pipe of differing thickness
- Cooling time for moving pipe, tapping a saddle and pressure testing
- Identify the difference between a compliant and non-compliant joint
- Undertake cutting and tapping procedures for PE pipe using a variety of methods
- Pressure testing procedures
- Understand jointing procedures under various conditions, inclement weather and conditions
- Demonstrate procedures and safety requirements for joining PE pipe to other pipelines

If undertaking the laying of cast iron and steel pipe

G 2.2.20 Identify cast iron pipe and fittings

Evidence shall show an understanding of the knowledge required to install cast iron pipelines, fittings and accessories in a Gas Industry workplace, indicated by the following:

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- Characteristics of cast iron pipeline, pipe sizes
- Situations in which a cast iron pipeline is used
- Range of fittings and accessories for cast iron
- Cast iron lead & hemp joints and how they are constructed
- Appropriate selection of transition fittings and adaptors to other materials
- Advantages/disadvantages in using cast iron pipe
- Read and interpret MSDS applying appropriate measures

G 2.2.21 Work with cast iron pipe and fittings

Evidence shall show an understanding of the requirements to work with cast iron pipelines and fittings on a Gas Industry pipeline, indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Dangers of working with live gas
- Equipment, tools and materials required for working with cast iron pipelines
- Purpose and function or equipment, tools and materials
- Requirements of Australian Standards and gas industry standards for working with cast iron pipe and fittings
- Safety requirements and procedures for using equipment, tools and materials
- Procedures for joining cast iron pipeline to other pipeline

G 2.2.23 Install steel pipeline, fittings and accessories

Evidence shall show an understanding of the requirements to install steel pipelines, fittings and accessories in a Gas Industry workplace (distribution), indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Dangers of working with live gas
- Safety considerations when working on steel such as bonding leads and voltage testers
- Characteristics of steel pipeline, fittings and accessories
- Benefits of using a steel pipeline
- Steel pipe sizes, range of fitting and accessories.
- Situations in which a steel pipeline is used in the distribution network
- Appropriate selection of transition fittings and adaptors to other materials
- Handling/Storage
- Cleaning internally

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- Differentiate steel from other materials
- Corrosion mitigation
- Insulated joints
- Welding specifications
- Pressure testing
- Read and interpret MSDS applying appropriate measures
- Coating types and repair

G 2.2.24 Work with steel pipeline and fittings

Evidence shall show an understanding of the requirements to work with steel pipelines and fittings on a Gas Industry pipeline (distribution), indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Dangers of working with live gas
- Requirements of Australian Standards and Gas Industry standards for working with steel pipe and fittings
- Equipment, tools and materials required for working with steel pipelines
- Purpose and function of equipment, tools and materials
- Pipe cutting methods
- Stop off equipment for steel
- Safety requirements and procedures for using equipment, tools and materials
- Coating types and repair

G 2.2.26 Determine depth of steel pipeline in ground

Evidence shall show an ability to undertake the measurement of the depth that the pipeline should be buried on a Gas Industry pipeline (distribution), indicated by the following:

- Depth of cover requirements - AS1697
- Identify depth of cover required for steel pipeline in various locations
- Identify obstacles affecting minimum depth of cover for pipeline
- Develop solutions for dealing with obstacles affecting the depth of cover including transitioning to other approved materials and applying protection
- Trench widths
- Bedding requirements
- Support of steel pipe
- Backfilling requirements
- Reinstatement

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If undertaking the laying of copper pipe

G 2.2.27 Identify copper pipeline, fittings and accessories

Evidence shall show an understanding of the processes required to identify copper pipeline, fittings and accessories on a Gas Industry pipeline, indicated by the following:

- Characteristics of copper pipeline, fittings and accessories
- Copper pipe sizes, range of fitting and accessories.
- Situations in which a copper pipeline is used
- Appropriate selection of transition fittings and adaptors to other materials
- Differentiate copper from other materials
- Read and interpret MSDS applying appropriate measures

G 2.2.28 Bend and join copper pipeline and fittings

Evidence shall show an ability to bend and join copper pipe and fittings for a Gas Industry pipeline, indicated by the following:

- Equipment, tools and materials required for joining copper pipeline and fittings
- Purpose and function of equipment, tools and materials
- Safety requirements and procedures for cutting and joining copper pipeline including mechanical and soldered or welded joints
- Procedures for cutting and tapping copper pipeline
- Procedures for pressure testing a pipeline
- Procedures and safety requirements for joining copper pipeline to other pipeline
- Procedures for joining copper pipeline

G 2.2.30 Determine depth of copper pipeline in ground

Evidence shall show an ability to determine the appropriate depth that copper pipe should be laid in a trench for a Gas Industry pipeline, indicated by the following:

- Depth of cover requirements - AS1697
- Identify depth of cover required for copper pipeline in various locations
- Identify obstacles affecting minimum depth of cover for pipeline
- Develop solutions for dealing with obstacles affecting the depth of cover including transitioning to other approved materials and applying protection
- Trench widths

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- Bedding requirements
- Support of copper pipe
- Backfilling requirements
- Reinstatement

G 2.2.31 Install copper pipe

Evidence shall show an understanding of how to install copper pipe on a Gas Industry pipeline, indicated by the following:

- Requirements of Australian Standard and Gas Industry standards for installing copper pipeline
- Need to install or insert pipeline
- Procedures for installing copper pipeline
- Procedures for terminating copper pipeline

G 2.2.32 Comply with requirements for excavating and reinstating site

Evidence shall show an understanding of the requirements for preparing, conducting and completing an excavation indicated by the following:

- Identifying plans, codes, standards and drawings relevant to specific worksites
- Reading and interpreting relevant plans, codes, standards and drawings
- Regulatory requirements and procedures for excavating trenches and reinstating sites
- Apply shoring or benching requirements
- Notification of appropriate authorities and requirements for temporary or permanent restorations

G 2.2.33 Locate utilities and services

Evidence shall show an understanding and an ability to locate services, indicated by the following:

- Identification of relevant authorities or enterprises to contact regarding the location of other utilities services (gas, water, electricity, telecommunication, sewerage and stormwater)
- Read and interpret plans and drawings to identify the location of utilities and services
- Identification of utilities and services conduits and cables
- Correct use of electronic and manual service locators
- Apply hand excavation as required for the purposes of locating utilities and services

G 2.2.43 Appliance relighting within enterprise guidelines

Evidence shall show an understanding of Appliance

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relighting indicated by the following:

- Customer liaison skills
- Identify environmental and safety hazards, assess risks and implement control measures
- Safety requirements for entering domestic and commercial customer sites
- Procedures for purging service lines
- Procedures for conducting appliance relights

G 2.2.44 Handling, Transporting and Installing Meters and Regulators for services within enterprise guidelines

Evidence shall show an understanding of handling, transporting and installing meters and regulators for a service, indicated by the following:

- Customer liaison skills
- Identify environmental and safety hazards, assess risks and implement control measures
- Knowledge of Australian Standards associated with the installation of gas meters and regulators
- Identify that the regulator is working correctly
- Replace faulty regulator with a comparable regulator
- Measuring and testing flow rates and lock ups
- Correct manual handling procedures
- Safety requirements for entering domestic and commercial customer sites
- Procedures for purging service lines
- Procedures for gas leak and gas flow testing
- Test the equipment to recognised gas industry standards
- Completion of necessary connection forms and processes

G 2.2.49 Connect and tie in a residential service

Evidence shall show an understanding and demonstration for connecting and tying in residential gas services, indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Safety requirements and procedures for connecting and tying in a residential gas service
- Equipment, tools and materials required for working on a residential gas services
- Purging requirements used for residential connections
- Gas leak testing procedures for residential services
- Pressure testing procedures for residential services
- Apply procedures for ensuring continuity of supply

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including checking of network maps, gauging, fitting of bypasses and purging.

- Test the residential gas service to recognised gas industry standards
- Replace/Repair marker tape
- Apply appropriate procedures in the event of uncontrolled gas escapes
- Tie in and commission a residential service

G 2.2.50 Connect and tie in a commercial/industrial service and disconnect, reconnect gas industry services

Evidence shall show an understanding and demonstration for disconnecting, reconnecting and tying in a gas services, indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Safety requirements and procedures for disconnecting, reconnecting and tying in commercial and industrial gas services
- Equipment, tools and materials required for working with a range of commercial and industrial gas services
- Purging requirements used for residential, industrial and commercial connections
- Gas leak testing procedures
- Pressure testing procedures
- Apply procedures for ensuring continuity of supply including checking of network maps, gauging, fitting of bypasses and purging.
- Test the gas service to recognised gas industry standards
- Replace/Repair marker tape
- Apply appropriate procedures in the event of uncontrolled gas escapes
- Tie in and commission service

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Evidence Guide

EVIDENCE GUIDE

9) The Evidence Guide forms an integral part of this Unit and shall be used in conjunction with all components parts of this unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry regulatory policy in this regard.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature so as to minimise error in judgment.

Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practiced. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

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Critical aspects of evidence required to demonstrate competency in this unit

9.2)

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines — UEG11'. Evidence shall also comprise.

- A representative body of Performance Criteria demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
  - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and range
  - Apply sustainable energy principles and practices as specified in the Performance Criteria and range
  - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit to such an extent that the learner's performance outcome is reported in accordance with the preferred approach; namely a percentile graded result, where required by the regulated environment
  - Demonstrate an appropriate level of employability skills
  - Conduct work observing the relevant anti discrimination legislation, regulations, polices and workplace procedures
- Demonstrate performance across a representative range of contexts from the prescribed items below. Complete Groups A and B. Complete 1 of the following Groups: Group C, D. Complete 2 of the following Groups: E, F, G, H. Complete Groups I and J.

Range of tools/equipment/procedures/workplace

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Group No	The minimum number of items on which skill is to be demonstrated	Item List
A	All	Interpret technical drawings and symbols Isolate, vent and purge gas pipeline systems and services Operation of gas detector Emergency response procedures Operate service locator Use and interpret Dial Before You Dig reports
B	At least 2	Excavation Trenching Stich bore Horizontal drilling Directional drilling
C	At least 4	Nylon (Polyamide) pipeline laying techniques Nylon gluing Connection of Nylon to other materials UPVC pipeline laying techniques UPVC solvent cemented joints UPVC moulded joints UPVC compression couplings or flanges Connection of UPVC to other materials Practical application of AS4645.3 ‘gas distribution networks plastics pipe systems’

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D	At least 4	Saddle Fusion PE pipeline laying techniques PE Electrofusion PE Butt Fusion Compression couplings or flanges Connection of PE to other materials Practical application of AS4645.3 ‘gas distribution networks plastics pipe systems’
E	At least 2	Steel pipeline coating repair Steel pipeline coating testing Steel field joint coating
F	At least 3At least 3	Connection of steel to other materials Sleave application Clamp application Hot tap and stopple Practical application of AS4645.2 ‘gas distribution networks – steel pipe systems’
G	All	Connection of copper to other materials Silver brazing Copper bending
H	All	Work utilising relevant OHS legislation, regulations, codes of practice, policies and procedures Working knowledge of the

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		relevant confined space entry compliance code Maintain a safe and clean workplace Work safely with hazardous materials and equipment Apply safe manual handling techniques Communicate effectively in the workplace Apply basic planning skills
I	All	Install services in accordance with procedures and with minimum impact on landscaping Disconnect services Connect and test services Light appliances
J	At least one occasion	Deal with an unplanned event by drawing on essential knowledge and associated skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items

Context of and specific resources for assessment

9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

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- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this Competency Standard Unit.
- Appropriate environmental regulation and work practices.
- Appropriate organisational requirements.
- Appropriate work environment, equipment and tools.

In addition to the resources listed above, in Context of and specific resources for assessment, evidence should show demonstrated competency in constructing and laying distribution pipelines.

Assessment of this competency must also be undertaken in either an actual workplace or under a simulated work environment. Assessment must also integrate the employability skills.

Method of assessment

9.4)

This Competency Standard Unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note: Competent performance with inherent safe working practices is expected in the Industry to which this Competency Standard Unit applies. This requires that the specified Essential Knowledge and Associated Skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and associated skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no recommended concurrent assessments with this unit, however in some cases efficiencies may be gained in terms of learning and assessment effort being concurrently managed with allied Competency Standard Units where listed.

UEGNSG102B Carry out work activities in a utilities industry work environment

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UEENEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace
UEGNSG104B	Comply with environmental policies and procedures
UEGNSG105B	Establish the work site

Range Statement

RANGE STATEMENT

10) This relates to the competency standard unit as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.

This Competency Standard Unit shall be demonstrated in relation to the construction and laying of distribution pipelines.

The following constants and variables included in the Element/Performance Criteria in this unit are fully described in the Definitions Section of this volume and form an integral part of the Range Statement of this unit:

Services (2)

Appropriate persons (2)

Materials (2)

Tools and equipment (2)

Safe working procedures (2)

Legislative requirements (2)

Unit Sector(s)

Not applicable.

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Competency Field

Competency Field **11)**

Distribution.

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UEPOPS242B Operate and monitor dust collection plant

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor **1) Scope:**

1.1) Descriptor

This unit deals with the skills and knowledge required to operate, inspect and monitor dust collection plant associated with a power station.

Application of the Unit

Application of the Unit **2)**

This unit is intended to augment formally acquired competencies. It is suitable for employment-based programs under an approved contract of training.

Licensing/Regulatory Information

License to practice **3)**

The skills and knowledge described in this unit do not require a licence to practise in the workplace. However, practice in this unit is subject to regulations directly related to Occupational Health and Safety and where applicable contracts of training such as apprenticeships and the like.

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Pre-Requisites

Prerequisite Unit(s) **4)**

Competencies **4.1)**

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

Where pre-requisite pathways have been identified. All competencies in the Common Unit Group must be have been completed.

There are no pre-requisite units.

Literacy and numeracy skills **4.2)**

Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following levels. A description of what each level entails is provided in Section 2.3.1 Language, Literacy and Numeracy.

Reading	2	Writing	2	Numeracy	2

Employability Skills Information

Employability Skills **5)**

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

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Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA	
1 Plan and prepare work	1.1	Safety issues are identified to comply with enterprise/site and legislative requirements
	1.2	Work requirements are identified from relevant personnel and documentation
	1.3	Localised plant inspection and field preparation for service are carried out in accordance with manufacturer's and enterprise/site procedures
	1.4	Plant operational pre-requisites are established in accordance with manufacturer's and enterprise/site procedures
	1.5	Sequence for recommissioning of plant is determined to suit existing circumstances in accordance with enterprise/site requirements
	1.6	Where appropriate, the teams and individuals roles and responsibilities within the team are identified and, where required, assist in the provision of the on-the-job training
2 Operate plant	2.1	Plant is operated in accordance with enterprise and manufacturer's operating procedures
	2.2	Plant is monitored and observed to detect deviations from normal operating conditions
	2.3	Corrective actions taken or reported, to rectify abnormalities are in accordance with industry standards and site requirements

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ELEMENT	PERFORMANCE CRITERIA	
3 Test plant operation	3.1	Tests are performed in accordance with defined procedures applicable to the operational test
	3.2	Plant is observed for correct operational response
	3.3	Corrective action is taken when response is not in accordance with documentation, plant integrity or personnel safety requirements
	3.4	Plant is returned to required operational status upon completion of test
4 Analyse plant faults	4.1	Causes of abnormal plant operating conditions are identified by analysing the technical and operational information in a logical and sequential manner
	4.2	Corrective action taken is in accordance with enterprise/site procedures
	4.3	Plant integrity and personnel safety is maintained through consultation with appropriate personnel, and with reference to plant, technical and operational documentation
5 Monitor and inspect plant	5.1	Plant to be monitored/inspected is physically identified
	5.2	Plant is monitored/inspected for normal operation or to detect deviations
	5.3	Corrective action taken is in accordance with enterprise/site procedures
	5.4	Appropriate personnel are notified when defects are detected
6 Complete documentation	6.1	Documentation is updated and plant problems, movements, and abnormalities and status are reported and logged in accordance with enterprise/site procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of operating and monitoring dust collection plants.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

The extent of the Essential Knowledge and Associated Skills required follows:

KS01-PO242B Dust collection plant

Evidence shall show that knowledge has been acquired for safe working practices of:

T1 Relevant Environmental, Occupational Health and Safety legislation and regulations

T2 Enterprise procedures

T3 Plant drawings and manufacturers manuals

T4 Introduction to and typical arrangements of power production plant

T5 Relevant plant and equipment, its location and operating parameters

T6 Electric motor types and characteristics

T7 Pump and compressor types and characteristics

T8 Valve, damper and actuator types and characteristics

T9 Switchgear types and characteristics

T10 Electrical protection types and characteristics

T11 Plant status

T12 Enterprise recording procedures

T13 Control and data acquisition systems

T14 Properties of matter

T15 Lubrication and bearings

T16 Electrical principles

T17 Auxiliary supply systems

T18 Safe operating principles

KS02-PO242B Dust collection plant

Specific skills needed to achieve the Performance Criteria:

T1 Interpret plant drawings and manufacturers manuals

T2 Apply enterprise recording procedures

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REQUIRED SKILLS AND KNOWLEDGE

T3 Identify plant status

T4 Prepare plant/equipment for operation

T5 Organise resources

T6 Operate dust collection plant

T7 Apply diagnostic and testing techniques

T8 Identify and respond to abnormal plant operating conditions

T9 Plan and prioritise work

T10 Use relevant hand tools

T11 Communicate effectively

T12 Apply data analysis techniques and tools

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Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the competency standard unit and must be read in conjunction with the Performance Criteria and the Range Statement of the competency standard unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this competency standard unit and shall be used in conjunction with all components parts of this unit and, performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry and, Regulatory policy in this regard.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

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Critical aspects of evidence required to demonstrate competency in this unit

9.2)

Before the critical aspects of evidence are considered all pre-requisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each Element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the "Assessment Guidelines – UEP12". Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
  - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and Range Statement
  - Apply sustainable energy principles and practices as specified in the Performance Criteria and Range Statement
  - Demonstrate an understanding of the Essential Knowledge and Associated Skills as described in 6) Essential Knowledge and Associated Skills of this unit
  - Demonstrate an appropriate level of employability skills
  - Conduct work observing the relevant Anti-Discrimination legislation, regulations, polices and workplace procedures
- Demonstrated performance across a representative range of contexts from the prescribed items below:
  - Knowledge and application of relevant sections of OH&S legislation, statutory legislation, enterprise/site safety procedures and enterprise/site emergency procedures
  - Preparation and planning of work, Operation of electrostatic dust collection plant, Operationally testing plant, Analysing plant faults, Monitoring plant operation
  - Dealing with an unplanned event by drawing on Essential Knowledge and Skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items.

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Context of and specific resources for assessment

9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this competency standard unit

Competency Standards should be assessed in the workplace or simulated workplace and under the normal range of workplace conditions.

Assessment of this unit will be supported with documentary evidence, by means of endorsement stating type and application of work.

In addition to the resources listed above in Context of assessment', evidence should show competency working, in limited spaces, with different types of plant and equipment as well as different structural/construction types and method and in a variety of environments.

Method of assessment

9.4)

This unit shall be assessed by methods given in Section 1.3.00 Assessment Guidelines.

Note:
Competent performance with inherent safe working practices is expected in the Industry to which this competency standard unit applies. This requires that the specified Essential Knowledge and Associated Skills be assessed in a structured environment, which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the Essential Knowledge and Skills described in this unit.

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Concurrent assessment and relationship with other units

9.5)

There are no recommended concurrent assessments with this unit, however in some cases efficiencies may be gained in terms of learning and assessment effort being concurrently managed with allied competency standard units where listed.

Nil

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Range Statement

RANGE STATEMENT

10) This relates to the competency standard unit as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.

Systems, plant and or equipment may include electrical supply switchboard(s) and transformers; fans; electrical motors; valves, dampers and actuators (electric, hydraulic, manual and pneumatic); lubricating and oil conditioning systems; supervisory, alarm, protection and control equipment; dust ejectors; electrostatic precipitators; bag filters; hoppers and associated equipment; sluice water systems; and chemical injection systems

Safety standards may include relevant sections of Occupational Health and Safety legislation, enterprise safety rules, relevant state and federal legislation, national standards for plant and Australian standards

Information and documentation sources may include verbal or written communications; enterprise safety rules documentation; enterprise operating instructions; manufacturer's operational and maintenance manuals; equipment and alarm manuals; dedicated computer equipment; enterprise standing instructions and plant notes; and enterprise log books

Technical and operational indicators may include stimuli (audio, smell, touch, visual), remote or local indicators and recorders and alarms (visible and or audible)

Communications may be by means of telephone, two way radio, pager, computer (electronic mail), operating log (written or verbal) and public address system.

Tests may include motor direction checks, stand-by plant "cut-in" tests, performance tests and alarm initiation tests.

Appropriate personnel to consult, give or receive direction may include, supervisor/team leader or equivalent, power plant operations personnel, technical and engineering officers or equivalent, maintenance staff, contractor personnel and other production staff or equivalent.

Test, fault finding and operating tools may include high voltage testers, proving dead equipment, power or hand tools.

Operating environment may be during inclement or otherwise harsh weather conditions, in wet/noisy/dusty/hot areas and during continuous operation.

Faults and abnormal operating conditions may include motor/pump/ actuator/valve/dampers failure/malfunctions, control equipment failure/ malfunction, loss of electrical supply to plant and equipment, excessive vibration of pumps/motors, loss/low ejector water flow, broken "wire" in cell, loss of chemical injection and chemical storage/delivery plant malfunctions, low/loss air pressure, loss of pump gland sealing water, blocked ejector strainers, blocked hoppers and rapper failure

Generic terms are used throughout this Training Package for vocational standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms are given in Section 2.1 Preliminary Information

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RANGE STATEMENT

and Glossaries.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field	**11)**
	Operations

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UEPOPS316B Operate and monitor boiler steam/water cycle

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This unit deals with the skills and knowledge required to operate, inspect and monitor boiler steam / water cycle.

Application of the Unit

Application of the Unit

2)

This unit is intended to augment formally acquired competencies. It is suitable for employment-based programs under an approved contract of training.

Licensing/Regulatory Information

License to practice

3)

The skills and knowledge described in this unit do not require a licence to practise in the workplace. However, practice in this unit is subject to regulations directly related to Occupational Health and Safety and where applicable contracts of training such as apprenticeships

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Pre-Requisites

Prerequisite Unit(s) **4)**

Competencies **4.1)**

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

Where pre-requisite pathways have been identified. All competencies in the Common Unit Group must be have been completed.

There are no pre-requisites units

Literacy and numeracy skills **4.2)**

Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following levels. A description of what each level entails is provided in Section 2.3.1 Language, Literacy and Numeracy.

Reading	3	Writing	3	Numeracy	3

Employability Skills Information

Employability Skills **5)**

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

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Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA	
1 Plan and prepare work	1.1	Safety issues are identified to comply with enterprise/site and legislative requirements
	1.2	Work requirements are identified from relevant personnel and documentation
	1.3	Documentation to determine plant status is assessed and evaluate
	1.4	Localised plant inspection, pre-operational checks and field preparations for service are carried out in accordance with manufacturer and enterprise/site procedures
	1.5	Plant operational pre-requisites are established in accordance with manufacturer and enterprise/site procedures
	1.6	Sequence for recommissioning of plant is determined to suit existing circumstances in accordance with enterprise/site requirements
	1.7	Where appropriate, the teams and individuals roles and responsibilities within the team are identified and, where required, assist in the provision of the on-the-job training
2 Operate plant	2.1	Plant is operated in accordance with enterprise and manufacturer operating procedures
	2.2	Plant is monitored and observed to detect deviations from normal operating conditions
	2.3	Corrective actions taken or reported, to rectify abnormalities, are in accordance with industry

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ELEMENT		PERFORMANCE CRITERIA	
			standards and site requirements
		2.4	Plant to be removed from service is locally identified and is removed from service in accordance with enterprise/site requirements
		2.5	Corrective actions are taken in accordance with enterprise safety rules and site requirements when abnormalities are identified during the removal from service
3	Test plant operation	3.1	Tests are performed in accordance with defined procedures applicable to the operational test
		3.2	Plant is observed for correct operational response
		3.3	Corrective action is taken when response is not in accordance with documentation, plant integrity or personnel safety requirements
		3.4	Plant is returned to required operational status upon completion of test
4	Analyse plant faults	4.1	Causes of abnormal plant operating conditions are identified by analysing the technical and operational information in a logical and sequential manner
		4.2	Corrective action taken is in accordance with enterprise/site procedures
		4.3	Plant integrity and personnel safety are maintained through consultation with appropriate personnel, and with reference to plant, technical and operational documentation
5	Monitor and inspect plant	5.1	Plant to be monitored/inspected is physically identified
		5.2	Plant is monitored/inspected for normal operation or to detect deviations
		5.3	Corrective action taken is in accordance with enterprise/site procedures
		5.4	Appropriate personnel are notified when defects

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ELEMENT	PERFORMANCE CRITERIA	
		are detected
6 Complete documentation	6.1	Documentation is updated and plant problems, movements, and abnormalities and status are reported and logged in accordance with enterprise/site procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of operating and monitoring boiler steam/water cycles.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

The extent of the Essential Knowledge and Associated Skills required follows:

KS01-PO 316B Boiler steam/water cycle

Evidence shall show that knowledge has been acquired for safe working practices of:

T1 Relevant Environmental, Occupational Health and Safety legislation and regulations

T2 Enterprise procedures

T3 Plant drawings and manufacturers manuals

T4 Introduction to and typical arrangements of power production plant

T5 Relevant plant and equipment, its location and operating parameters

T6 Electric motor types and characteristics

T7 Pump and compressor types and characteristics

T8 Valve, damper and actuator types and characteristics

T9 Switchgear types and characteristics

T10 Electrical protection types and characteristics

T11 Relevant state and territory regulations

T12 Plant status

T13 Enterprise recording procedures

T14 Control and data acquisition systems

T15 Boiler drains and traps types and characteristics

T16 Thermodynamics

T17 Principles governing efficient combustion

T18 Properties of matter

T19 Boiler steam/water cycle fundamentals

T20 Boiler steam/water systems, types and characteristics

T21 Economiser and superheater types and characteristics

T22 Principles of steam temperature control

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REQUIRED SKILLS AND KNOWLEDGE

KS02-PO 316B Boiler steam/water cycle

Specific skills needed to achieve the Performance Criteria:

T1 Interpret plant drawings and manufacturers manuals

T2 Apply relevant state and territory regulations

T3 Apply enterprise recording procedures

T4 Identify plant status

T5 Prepare plant/equipment for operation

T6 Organise resources

T7 Operate boiler water/steam cycle

T8 Apply diagnostic and testing techniques

T9 Identify and respond to abnormal plant operating conditions

T10 Plan and prioritise work

T11 Use relevant hand tools;

T12 Communicate effectively

T13 Apply data analysis techniques and tools

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the unit of competency and must be read in conjunction with the Performance Criteria and the Range Statement of the unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this Competency Standard Unit and shall be used in conjunction with all components parts of this unit and, performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment **9.1)**

Longitude competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment

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is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry and, Regulatory policy in this regard.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature so as to minimise error in judgment.

Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

9.2)

Before the critical aspects of evidence are considered all pre-requisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the "Assessment Guidelines – UEP12". Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
  - Implement Occupational Health and Safety workplace

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procedures and practices including the use of risk control measures as specified in the Performance Criteria and Range Statement
    - Apply sustainable energy principles and practices as specified in the Performance Criteria and Range Statement
    - Demonstrate an understanding of the essential knowledge and associated skills as described in 6) Essential Knowledge and Associated Skills of this unit
    - Demonstrate an appropriate level of employability skills
    - Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
- Demonstrated performance across a representative range of contexts from the prescribed items below:
    - Knowledge and application of relevant sections of: Occupational Health and Safety legislation; Statutory legislation; Enterprise/site safety procedures; Enterprise/site emergency procedures
    - Preparation and planning of work
    - Operation of boiler water/steam cycle
    - Operationally testing plant
    - Analysing plant faults
    - Monitoring plant operation
    - Dealing with an unplanned event by drawing on essential knowledge and skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items

Context of and specific resources for assessment

9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

Competency Standards should be assessed in the workplace or simulated workplace and under the normal range of workplace conditions.

Assessment of this unit will be supported with documentary evidence, by means of endorsement stating type and application of

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work.

In addition to the resources listed above in Context of assessment', evidence should show competency working, in limited spaces, with different types of plant and equipment as well as different structural/construction types and methods and in a variety of environments.

Method of assessment

9.4)

This unit shall be assessed by methods given in Section 1.3.00 Assessment Guidelines.

Note:

Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no recommended concurrent assessments with this unit, however in some cases efficiencies may be gained in terms of learning and assessment effort being concurrently managed with allied competency standard units where listed.

Nil

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Range Statement

RANGE STATEMENT

10) This relates to the unit of competency as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.

Systems, plant and/or equipment may include electrical supply switchboard(s) and transformers; electrical motors; valves and actuators (electric, hydraulic and pneumatic); supervisory, alarm, protection and control equipment; boiler circulation systems; boiler filling systems; boiler venting and draining systems; cooling water plant and equipment; filters; strainers; moisture removal devices; pressure control devices; safety devices; high and low pressure systems; and boiler water level indicators.

Safety standards may include relevant sections of Occupational Health and Safety legislation, enterprise safety rules, relevant state and federal legislation, national standards for plant and Australian standards.

Information and documentation sources may include verbal or written communications; enterprise safety rules documentation; equipment and alarm manuals; dedicated computer equipment; enterprise standing and operating instructions; and enterprise log books.

Technical and operational indicators may include stimuli (audio, smell, touch, visual), remote or local indicators and recorders and alarms (visible and or audible).

Communications may be by means of telephone, two way radio, pager, computer (electronic mail), operating log (written or verbal) and public address system.

Tests may include laboratory test for water quality and impurities, alarm testing, leak test and safety valve float.

Appropriate personnel to consult, give or receive direction may include; supervisor/team leader or equivalent, power plant operations personnel or equivalent, technical and engineering officers or equivalent, maintenance staff and contractor personnel.

Test, fault finding and operating tools may include power or hand tools.

Operating environment may be during inclement or otherwise harsh weather conditions, in wet/noisy/dusty/hot areas and during continuous operation.

Faults and abnormal operating conditions may include motor/pump/ actuator/valve failure/malfunctions, control equipment failure/malfunctions, loss of electrical supply to plant and equipment, excessive vibration pumps/motors, loss/low cooling water pressure, boiler tube leaks, low/high steam pressure/temperature, plant equipment failure and loss of control air supply.

Generic terms are used throughout this Training Package for vocational standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms are given in Section 2.1 Preliminary Information and Glossaries.

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Unit Sector(s)

Not applicable.

Competency Field

Competency Field **11)**

Operations.

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BSBWOR502A Ensure team effectiveness

Modification History

Not Applicable

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to facilitate all aspects of teamwork within the organisation. It involves taking a leadership role in the development of team plans, leading and facilitating teamwork and actively engaging with the management of the organisation.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

This unit applies to managers and addresses the need for managers to facilitate work teams and to build a positive culture within work teams. The unit takes a systematic and planned approach to developing teams. It includes the soft skills as well as more structured approaches to the management of teams.
At this level, work will normally be carried out within complex and diverse methods and procedures which require the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish team performance plan	1.1. ***Consult*** team members to establish a common understanding of team purpose, roles, responsibilities and ***accountabilities*** in accordance with organisational goals, plans and objectives 1.2. Develop ***performance plans*** to establish expected ***outcomes***, ***outputs***, ***key performance indicators*** and goals for work team 1.3. Support team members in meeting expected performance outcomes
2. Develop and facilitate team cohesion	2.1. Develop ***strategies*** to ensure team members have input into planning, decision making and operational aspects of work team 2.2. Develop ***policies and procedures*** to ensure team members take responsibility for own work and assist others to undertake required roles and responsibilities 2.3. Provide feedback to team members to encourage, value and reward individual and team efforts and contributions 2.4. Develop ***processes*** to ensure that issues, concerns and problems identified by team members are recognised and addressed
3. Facilitate teamwork	3.1. Encourage team members and individuals to participate in and to take responsibility for team activities, including communication processes 3.2. Support the team in identifying and resolving work performance problems 3.3. Ensure own contribution to work team serves as a role model for others and enhances the organisation's image for all ***stakeholders***
4. Liaise with stakeholders	4.1. Establish and maintain open communication processes with all stakeholders 4.2. Communicate information from ***line manager***/***management*** to the team 4.3. Communicate unresolved issues, concerns and problems raised by team members and

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	follow-up with line manager/management and other relevant stakeholders 4.4. Evaluate and take necessary corrective action regarding unresolved issues, concerns and problems raised by internal or external stakeholders

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.
Required skills
• training skills to mentor and coach team members • communication skills to explain team goals, to address team conflict and to build an environment of trust • planning and organisational skills to keep team on track and focussed on work outcomes.
Required knowledge
• group behaviour • models for conflict resolution.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • range of techniques that can be used to build work teams, strengthen communications in the team and resolve conflict • methods for engaging with stakeholders and obtaining advice from outside the work team, to ensure team is focussed and on track • knowledge of group behaviour.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports • demonstration of team building techniques • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of performance in role plays • review of performance plans developed for work team • review of policies and procedures developed to ensure team members take responsibility for own work.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Management.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Consultation may refer to:	• conducting meetings, interviews, brainstorming sessions, email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual performance plans • mechanisms used to provide feedback to the work team in relation to outcomes of consultation
Accountabilities may refer to:	• responsibilities as defined in position descriptions, codes of conduct/behaviour, duty statements or similar • statement of conduct outlining responsibilities/actions/performance
Performance plans may refer to:	• individual performance plans linked to team goals • team plans based on work assignments and responsibilities
Outcomes, ***outputs***, ***key performance indicators*** may refer to agreed:	• changes in work roles and responsibilities • improved individual and team, performance and participation • improvements to systems, operations • measures for monitoring and evaluating the efficiency or effectiveness of systems or services • quality standards and expectations • targets for productivity improvements such as reduced downtime, higher production levels, decreases in absenteeism • targets for training and development
Strategies may refer to:	• clarification of roles and expectations • electronic communication devices and processes, such as intranet and email communication systems, to facilitate input • long-term or short-term plans factoring in

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	opportunities for team input • mentoring and 'buddy' systems to support team members in providing input • newsletters and briefings • training and development activities
Policies and procedures may refer to:	• organisational guidelines and systems that govern operational functions • procedures that detail the activities that must be carried out for the completion of actions and tasks • Standard Operating Procedures
Processes may refer to:	• brainstorming options with the team for addressing concerns • creating a matrix of issues and concerns and distributing for comment • discussions with individuals regarding their concerns • distributing drafts for comment with a range of options for resolution of concerns • training and development sessions
Stakeholders may include:	• Board members • business or government contacts • funding bodies • union/employee groups and representatives • work team
Line manager/***management*** may refer to:	• chief executive officer • direct superior • other management representatives

Unit Sector(s)

Management and Leadership - Management

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BSBWOR501A Manage personal work priorities and professional development

Modification History

Not Applicable

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to manage own performance and professional development. Particular emphasis is on setting and meeting priorities, analysing information and using a range of strategies to develop further competence.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

This unit applies to managers and focuses on the need for managers to be organised, focussed and skilled, in order to effectively manage the work of others. As such it is an important unit for most managers, particularly as managers serve as role models and have a significant influence on the work culture and patterns of behaviour.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish personal work goals	1.1. Serve as a positive role model in the workplace through personal work planning and organisation 1.2. Ensure personal work goals, plans and activities reflect the organisation's plans, and ***own responsibilities and accountabilities*** 1.3. Measure and maintain personal performance in varying work conditions, work contexts and contingencies
2. Set and meet own work priorities	2.1. Take initiative to prioritise and facilitate competing demands to achieve personal, team and organisational goals and objectives 2.2. Use ***technology*** efficiently and effectively to manage work priorities and commitments 2.3. Maintain appropriate work-life balance, and ensure stress is effectively managed and health is attended to
3. Develop and maintain professional competence	3.1. Assess personal knowledge and skills against ***competency standards*** to determine development needs, priorities and plans 3.2. Seek feedback from employees, ***clients and colleagues*** and use this feedback to identify and develop ways to improve competence 3.3. Identify, evaluate, select and use ***development opportunities*** suitable to personal learning style/s to develop competence 3.4. Undertake participation in networks to enhance personal knowledge, skills and work relationships 3.5. Identify and develop new skills to achieve and maintain a competitive edge

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to receive, analyse and report on feedback
- literacy skills to interpret written and verbal information about workplace requirements
- organisational skills to set and achieve priorities.

Required knowledge

- principles and techniques involved in the management and organisation of:
  - performance measurement
  - personal behaviour, self-awareness and personality traits identification
  - personal development plan
  - personal goal setting
  - time management
- management development opportunities and options for self
- organisation's policies, plans and procedures
- types of learning style/s and how they relate to the individual
- types of work methods and practices that can improve personal performance.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • systems and processes (electronic or paper-based) used to organise and prioritise tasks, which show how work is managed • personal development plan, with career objectives and an action plan • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to asses knowledge of work methods and practices that can improve personal performance • review of personal work goals, plans and activities • evaluation of work-life balance • review of documentation assessing personal knowledge and skills against competency standards.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Management.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Own responsibilities and accountabilities may include:	• expectations of workplace performance as expressed in a performance plan • outputs as expressed in position descriptions or duty statements • statement of conduct outlining an individual's responsibilities/actions/performance
Technology may include:	• computerised systems and software, databases, project management and word processing • electronic diary • personal digital assistant (PDA)
Competency standards may include:	• enterprise-specific units of competency consistent with work requirements • nationally endorsed units of competency consistent with work requirements
Clients and colleagues may be:	• colleagues at the same level and more senior managers • internal or external customers • people from a wide range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities • team members
Development opportunities may include:	• action learning • coaching • exchange/rotation • induction • mentoring • shadowing • structured training programs

Unit Sector(s)

Management and Leadership - Management

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BSBSMB405A Monitor and manage small business operations

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to operate a small business and to implement a business plan. The strategies involve monitoring, managing and reviewing operational procedures. Specific legal requirements apply to the management of a small business.

Application of the Unit

Application of the unit	This work is undertaken by individuals who operate a small business. The unit is suitable for existing micro and small businesses or a department in a larger organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop OPERATIONAL STRATEGIES AND PROCEDURES	1.1. Develop an action plan to provide a clear and coherent direction, in accordance with the ***business goals and objectives*** 1.2. Identify ***occupational health and safety*** (***OHS***) ***and environmental issues*** and implement strategies to minimise risk factors 1.3. Develop a ***quality system*** for the business in line with industry standards, compliance requirements and cultural criteria 1.4. Develop performance measures and ***operational targets*** to conform with the business plan 1.5. Develop strategies for innovation, including the utilisation of existing, new or emerging technologies, where practicable, to optimise business performance
2. Implement operational strategies and procedures	2.1. Implement systems and key performance indicators/targets to monitor business performance and customer satisfaction 2.2. Implement systems to control stock, expenditure/cost, wastage/shrinkage and risks to health and safety in accordance with the business plan 2.3. Maintain staffing requirements, where applicable, within budget to maximise productivity 2.4. Carry out the provision of goods/services in accordance with established legal, ethical cultural and ***technical standards*** 2.5. Provide goods/services in accordance with time, cost and quality specifications, and customer requirements 2.6. Apply quality procedures to address product/service and customer requirements
3. Monitor business performance	3.1. Regularly monitor/review the achievement of operational targets to ensure optimum business performance, in accordance with the business plan goals and objectives 3.2. Review systems and structures, with a view to more effectively supporting business performance 3.3. Investigate and analyse operating problems to establish causes and implement changes as required as part of the business quality system

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ELEMENT	PERFORMANCE CRITERIA
	3.4. Amend operational policies and procedures to incorporate corrective action
4. Review business operations	4.1. Review and adjust business plan, as required, to maintain business viability, in accordance with business goals and objectives 4.2. Clearly record proposed changes to aid future planning and evaluation 4.3. Undertake ongoing research into new business opportunities and adjust business goals and objectives as new business opportunities arise

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to develop criteria and targets for the business plan
- communication skills to question, clarify and report
- literacy skills to interpret legal requirements, company policies and procedures
- numeracy skills to manage performance information and to control the finances
- technology skills to use relevant business equipment.

Required knowledge

- methods for developing and maintaining networks
- methods for implementing operation and revenue control systems
- methods for monitoring performance and implementing improvements
- OHS responsibilities and procedures for managing hazards
- principles of risk management relevant to the business, including risk assessment
- quality system principles and methods
- relevant industry codes of practice
- relevant marketing, sales and financial concepts
- relevant performance measures
- role of innovation
- systems to manage staff, stock, expenditure, services and customer service
- technical or specialist skills relevant to the business operation.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • developing strategies and procedures to successfully manage the operation of the business • making appropriate adjustments to the business operations as required • knowledge of quality system principles and methods.
Context of and specific resources for assessment	Assessment must ensure: • access to relevant documentation • candidate's individual circumstances and work in the context of running a small business, are the basis for assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • portfolio of evidence including operational strategies and procedures • oral or written questioning to assess knowledge of principles of risk management relevant to the business, including risk assessment • review of analysis of operating problems (establishing causes and implementing changes as required as part of the business quality system) • review of records proposing changes to the business operations.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBSMB406A Manage small business finances • BSBSMB407A Manage a small team.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Operational strategies and procedures may be determined by:	• business premises (size, location, layout) • financial control systems and procedures • management and administrative systems and procedures • methods/techniques/technology • physical and natural resources • plant and equipment , including OHS requirements • premises, plant and equipment, which may be new or previously owned • purchase (sole or shared ownership) or leasing • raw materials • requirements, which may be one-off requirements or recurrent requirements (such as equipment maintenance) specific to the nature of the business • technology • use of existing, new and emerging technologies including e-commerce
Business goals and objectives may include:	• customer needs/marketing projections • family or community benefits • financial projections • goals, objectives, plans, systems and processes • lifestyle issues • proposed size and scale of the business, market focus of the business • short-, medium- or long-term goals • social responsibility
Occupational health and safety and environmental issues must include:	• controls, which may include instructions to workplace personnel concerning site hazards and controls, material safety data sheets, use of personal protective equipment, vehicle access, signs and barricades, traffic control, outside contractors

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RANGE STATEMENT	
	• establishment and maintenance of procedures for assessing and controlling risks • establishment and maintenance of procedures for identifying risks to health and safety • waste and by-products
Quality system may include:	• manual or computer quality control systems • quality assurance/management approaches • random inspections and assessments of goods and services against predetermined standards • random inspections and assessments of processes against predetermined standards • random sampling and follow-up of customers
Operational targets may include:	• external targets, which may relate to market share and positioning and may involve exploring new markets, building national or international trade links • internal targets, which may relate to size, quality, quantity and diversity, wages to sales, sales to area/stock levels/stock turnover/average debtor payment periods and levels • staffing level and skills mix • targets, which may be short-, medium- or long-term
Technical standards may include:	• current and generally agreed descriptions of what the product/service is, how it should be produced/delivered and the quality, safety, efficiency or other measures to determine the activity is done effectively

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Small and Micro Business

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Co-requisite units

Co-requisite units		

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BSBRKG403B Set up a business or records system for a small business

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to research, develop and implement business or records systems for a small office. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals who are required to demonstrate understanding of a broad knowledge base incorporating some theoretical recordkeeping concepts. The application is in relation to individuals working in a range of 'small' office environments where, in most cases, recordkeeping is only part of the individual's responsibilities; the unit addresses the less formal recordkeeping requirements of micro or small businesses or branches and technical operations centres of larger organisations. Typically, the individual would report to a supervisor or manager within the organisation and be solely responsible for the development and implementation of business or records systems, including training users of the system.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine recordkeeping requirements	1.1. Identify and ***document*** core business, supporting activities, ***resources***, and ***business and social context*** using observation and ***consultation*** 1.2. Determine security and access requirements for ***business or records system*** content from analysis of organisation's activities 1.3. Analyse business documentation to determine organisational reporting and accountability requirements 1.4. Identify ***organisational functions and activities*** for which records must be kept, from analysis of business and context documentation 1.5. Determine nature, detail, and format of ***records*** (content and ***metadata***) for each organisational function and activity from analysis of the business and its context
2. Devise an appropriate recordkeeping system	2.1. Determine metadata needed to manage records (store, locate and retrieve) in a business or records system 2.2. Select scale and number of business or records systems appropriate to scale and nature of business operations 2.3. Select technological requirements of business or records systems appropriate to scale and nature of business operations 2.4. Select cost structure for business or records systems appropriate to scale, nature, and organisational cash flow requirements 2.5. Ensure maintenance, disposal and updating requirements of business or records system conform to scale, nature, and culture of the organisation 2.6. Select business or records system suited to projected growth of the organisation
3. Develop business rules and procedures to support operations	3.1. Develop rules for incorporating individual records and information (records capture) into the business or records system 3.2. Develop rules for deciding and recording retention periods and appropriate disposal actions for records 3.3. Develop and document ***procedures for the use of the system*** 3.4. Provide system users with training or instructions in

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ELEMENT	PERFORMANCE CRITERIA
	the use of the business or records system, in line with the culture and scale of the organisation

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to explain and clarify procedures, and to consult with users of a records or business system
- literacy skills to read and interpret record content, functions and problems
- problem-solving and analysis skills to identify requirements of business or records system.

Required knowledge

- key provisions of relevant legislation from all forms of government, regulations, standards and documentation that may affect aspects of business operations, such as:
  - AS 5044.1:2002 AGLS Metadata element set
  - AS 5090:2003 Work process analysis for recordkeeping
  - AS ISO 15489:2004 Records management
  - AS ISO 23081.1:2006 Information and documentation - Records management processes - Metadata for records - Principles
  - Australian Stock Exchange(ASX) Principles of Good Corporate Governance
  - ethical principles
  - codes of practice
  - privacy and freedom of information
  - archives and records legislation
  - occupational health and safety
- general principles and processes of records management and records management systems, such as:
  - systems of control
  - records continuum theory
  - mandate and ownership of business process
  - environmental context
  - records characteristics
- internal controls
- organisational functions, structure and culture
- organisational policies and strategies
- organisational technological base.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • translating business functions and reporting requirements into a brief that describes the requirements of a business or records system • developing a business or records system, including rules and procedures • knowledge of organisational functions, structure and culture.
Context of and specific resources for assessment	Assessment must ensure: • access to examples of records, recordkeeping systems and policies • access to workplace reference materials such as procedural manuals and company policies.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • demonstration of techniques • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of documentation outlining procedures developed for the use of the system • oral or written questioning to assess knowledge of general principles and processes of recordkeeping systems.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • administration units • other knowledge management units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Documenting core business may involve identifying:	• authenticity, integrity, reliability and useability of records or other documents • diagrammatic representations • formal documents • hand written documents • informal communications • online instructions or computer-based format instructions that can be updated • paper-based manuals • other text
Resources may include:	• human resources and their availability • location of resources currently in operation • physical resources • organisational policies and procedures • technological resources • those available for purchase or development

Business and social context may include:	• clients or customers and their expectations
	• codes of ethics and codes of professional conduct specific to industry sector
	• community expectations
	• governance frameworks
	• industry sector characteristics and reporting requirements of that sector
	• internal and external accountability requirements
	• internal and external stakeholders whose interests must be taken into account
	• other relevant legislation and regulations, including those covering:
	  • business activity reporting
	  • business and income (PAYE) taxation
	  • corporation law reporting requirements
	  • environmental protection and waste

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RANGE STATEMENT	
	management • goods and services tax collection • industrial relations • occupational health and safety • privacy protection • statutory access rights and freedom of information • superannuation • social and ethical standards the community expects the organisation to meet
Consultation may include organisation's:	• head office • local management • principals • staff
Business or records systems may include:	• archival control systems • business systems • cash register-based systems • characteristics relating to: • aggregations • context • entities • metadata • current business or records systems • electronic records and document management system (ERDMS) • informal • paper-based accumulation and card systems • PC-based accounting systems, employee and tax records systems • proprietary recordkeeping package • storage facilities systems
Organisational functions and activities that may be documented may include:	• asset management • conventional and email correspondence • customer relationship management • human resources management • invoicing and sales • legislative, regulatory and licensing compliance • marketing and promotion • purchasing and expenditure

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RANGE STATEMENT	
	• research and development • risk management • stock control

Records may include:	• different stages of use:
	  • active
	  • archival
	• digital:
	  • remote drives
	  • servers
	  • CDs
	  • DVDs
	  • imaging systems
	  • PC-based applications
	  • mainframe
	• physical:
	  • audio-visual or multimedia
	  • graphic
	  • microform
	  • paper-based (acid free or multiple copies
	• variety of sources:
	  • already in the custody of the organisation
	  • in the process of being transferred between organisations

Metadata are those records which are maintained about the records themselves and may include:	• activity classification terms • date, time, and location of record creation or registration into the system • identity of record creator • indexing and descriptive terms • record format • security and access information • unique identifiers for each record
Procedures for the use of the system may include:	• how to use the business or records system • considering format and style • considering appropriateness for scale, nature, culture and number of operators who use the system

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Unit Sector(s)

Unit sector	

Competency field

Competency field	Knowledge Management - Recordkeeping

Co-requisite units

Co-requisite units		

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CPPSIS5006A Integrate spatial datasets

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to integrate spatial datasets including linking spatial, aspatial and attribute data for the purpose of providing spatially referenced information. It requires the ability to apply theoretical spatial concepts to a range of situations in order to correctly identify and integrate the appropriate information. Functions would be carried out within organisational guidelines.

Application of the Unit

Application of the unit

This unit of competency supports the application of self-management skills, planning and organising within data management and data manipulation, and the use of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in surveying, cartography, town planning, mapping or geographic information systems.

While no licensing, legislative, regulatory or certification requirements apply holistically to this unit at the time of publication, relevant federal, and state or territory legislation, regulations and codes of practice impact upon this unit (see unit performance criteria and range statement).

Licensing/Regulatory Information

Refer to Application of the Unit

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged, will assist in identifying employability skills requirements.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1Confirm task.	1.1 ***Client specifications*** are analysed to determine specific needs and required outcomes.
	1.2 Requirements for spatial data and ***constraints*** are identified through further consultation with ***client*** or ***relevant personnel*** and outcomes are recorded according to ***organisational guidelines***.
2Obtain spatial and attribute data.	2.1 Sources are determined consistent with specifications using relevant ***metadata***.
	2.2 Data is obtained according to organisational guidelines.
	2.3 Data is checked for integrity and quality.
	2.4 Geographic coverage is assessed for completeness.
	2.5 A metadata set is compiled based on sourced spatial data.
	2.6 ***Exception reports*** are referred to relevant personnel.
	2.7 Skills and knowledge are updated to accommodate changes in spatial dataset requirements.
	2.8 ***OHS*** requirements are planned for and adhered to.
3Create resultant spatial dataset.	3.1 ***Filtering parameters*** are established in line with scientific accuracy, redundancy, and client and organisational requirements.
	3.2 Spatial and ***aspatial*** data is translated into a format which satisfies specifications.
	3.3 ***Spatial datasets*** are populated with edited spatial data according to ***organisational spatial requirements***.
	3.4 Spatial and ***attribute*** data are linked according to specifications and industry standards.
4Link spatial and attribute data.	4.1 Method required for referencing the location of the attribute data is identified.
	4.2 Linking of the spatial and attribute data is completed according to the specifications.
	4.3 Spatial queries are carried out via the spatial data to access the attribute data.
5Test and validate spatial datasets.	5.1 ***Test queries*** are determined and implemented to ensure spatial datasets meet specifications.
	5.2 Spatial data is checked to ensure correctness of links.
	5.3 An exception report is developed according to organisational guidelines and reported back to relevant personnel.

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ELEMENT	PERFORMANCE CRITERIA
	5.4 All ***relevant documentation*** is completed according to organisational guidelines.
	5.5 Quality and useability of datasets are ensured according to organisational guidelines.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- ability to relate to people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities
- ability to translate requirements into design
- analytical skills, including systems analysis
- communication skills to:
  - consult effectively with clients and colleagues
  - impart knowledge and ideas through oral, written and visual means
- computer skills (high technical user level) to complete business documentation and apply software and hardware
- information management
- literacy skills to:
  - assess and use workplace information
  - locate and interpret legislation and other written documentation
  - prepare and manage documentation
  - read and write technical reports
  - research and evaluate in order to assess sources of spatial data
- negotiation skills
- numeracy skills to:
  - analyse errors
  - conduct image analysis
  - perform mental calculations
  - interpret and analyse statistics
  - record with accuracy and precision
  - undertake computations
- organisational skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- coordinate technical and human resource inputs to research activities
- prioritise activities to meet contractual requirements

- spatial skills to:
  - exercise precision and accuracy in relation to spatial and aspatial data integration
  - perform spatial data archival and retrieval and train others in this task
  - perform spatial data management and manipulation and train others in this task
  - perform file management and train others in this task
  - solve problems relating to height, depth, breadth, dimension, direction and position in actual operational activity and virtual representation
  - understand implications of height, depth, breadth, dimension and position to actual operational activity and virtual representation.

Required knowledge and understanding:

- classification systems, processes and products
- coordinating reference systems
- high-level computer knowledge
- industry standards
- organisational policies and guidelines, such as OHS guidelines
- precision and accuracy in relation to spatial information
- principles of data acquisition (e.g. photogrammetry, remote sensing, terrestrial survey and hydrography)
- quality guidelines
- reference systems and their relationship to each other
- relevant spatial database design tools
- risk management
- security management guidelines
- spatial and aspatial data
- spatial and attribute dataset structure
- spatial database operation
- spatial database structure requirements
- spatial data handling
- spatial data management practices
- spatial dataset integration, including the role of scale in dataset integration
- spatial data storage technology
- spatial data structure requirements.

Evidence Guide

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment

This unit of competency could be assessed on its own or in combination with other units relevant to the job function, for example units CPPSIS5001A Plan spatial data collection and validation, CPPSIS5002A Capture new spatial data, CPPSIS5005A Obtain and validate existing spatial data, CPPSIS5007A Maintain complex spatial data systems, CPPSIS5008A Develop a complex spatial and aspatial database, and CPPSIS5029A Determine suitable information sources to create new spatial datasets.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- accurate record keeping
- applying solutions to a range of problems
- devising and implementing a cost-effective, functional solution
- examining suitability of existing arrangements
- measuring outcomes against specifications
- operational knowledge in a broad range of areas relating to linking datasets and knowledge management
- organising and prioritising activity
- performing a range of tasks where choice between a substantial range of options is required
- taking responsibility for own outputs in work and learning.

Specific resources for assessment

Resource implications for assessment include access to:

- assessment instruments, including personal planner and assessment record book
- assignment instructions, work plans and schedules, policy documents and duty statements
- registered training provider of assessment services
- relevant guidelines, regulations and codes of practice
- suitable venue and equipment.

Access must be provided to appropriate learning and assessment support when required.

Where applicable, physical resources should include equipment modified for people with disabilities.

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Context of assessment	Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.
Method of assessment	Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment). Demonstrated competency in a range of situations, that may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace. Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation in realistic simulated environments may be substituted.
Guidance information for assessment	Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of spatial information services requirements to assess competency. Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical). Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff. All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory. Where assessment is for the purpose of recognition (recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time. In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Assessment processes will be appropriate to the language and literacy levels of the candidate and any

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cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Client specifications refer to description of outputs and may be contained in:

- contracts
- memos
- tender briefs
- verbal instructions
- written instructions.

Constraints may include:

- coverage
- datum
- environmental factors
- industry requirements
- legal and statutory
- financial
- resource availability
- time.

Client may include:

- customers with routine or special request
- external to organisation
- internal to organisation
- regular and new customers, including:
  - business enterprises
  - government agencies
  - members of the public
  - suppliers.

Relevant personnel may include:

- colleagues
- staff or employee representatives
- supervisors or line managers
- suppliers
- users.

Organisational guidelines may include:

- code of ethics
- company policy

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	• legislation relevant to the work or service function, including equal employment opportunity (EEO) • manuals • OHS policies and procedures • personnel practices and guidelines outlining work roles and responsibilities.

Metadata may include:	• summarised information about a spatial dataset that describes the characteristics of the dataset, including:
	  • availability
	  • conditions of use
	  • coordinate system
	  • currency
	  • date of acquisition
	  • quality
	  • source
	  • spatial data acquisition methodologies
	  • version control.

Exception reports may include:	• information on non-conforming items that require attention by other functions.
OHS may include:	• Australian standards • development of site safety plan • identification of potential hazards • inspection of work sites • training staff in OHS requirements • use of personal protective clothing • use of safety equipment and signage.
Filtering parameters may include:	• attribute range accuracy • geographic location.
Aspatial data refers to:	• data without a spatial component.
Spatial datasets may include:	• digital • hard copy • image • propriety standards • text or vector.
Organisational spatial requirements may include:	• administration (e.g. postcodes, suburbs, and federal and state electoral counties) • analysis of environmental, land and geographic information • asset management • cartographic services

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- civil engineering
- digital imagery
- electricity
- emergency services management
- environmental datasets
- geographic information systems
- hydrography
- integrated services - environmental, land and geographic related datasets
- land ownership tenure system
- local government
- location-based services
- global positioning
- mapping facilities
- photogrammetry
- remote sensing
- site analysis
- survey marks
- sewerage
- telecommunications
- terrestrial survey
- town planning
- utility services such as water
- water catchment.

Attributes are properties associated with an entity and may include:

- colour
- layer
- level
- line type and width
- text.

Test queries refer to:

- model set of questions with known answers.

Relevant documentation may include:

- electronic or paper-based correspondence with client
- final report
- records of conversation
- organisational work activity sheets.

Unit Sector(s)

Unit sector Spatial information services

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CPPSIS5005A Obtain and validate existing spatial data

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to obtain and validate existing spatial datasets. It requires the ability to plan and execute the data validation process, often in a supervisory capacity, incorporating technical problems and management requirements. Functions would be carried out within organisational guidelines.

Application of the Unit

Application of the unit

This unit of competency supports the application of organisational, sound communication, negotiation and problem-solving skills; the ability to demonstrate initiative and enterprise; and an understanding of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in surveying, cartography, town planning, mapping or geographic information systems.

While no licensing, legislative, regulatory or certification requirements apply holistically to this unit at the time of publication, relevant federal, and state or territory legislation, regulations and codes of practice impact upon this unit (see unit performance criteria and range statement).

Licensing/Regulatory Information

Refer to Application of the Unit

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged, will assist in identifying employability skills requirements.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1Obtain data.	1.1 ***Client instructions*** are analysed to ***determine specific needs*** and ***spatialdata requirements***.
	1.2 Data requirements are based on ***specifications*** and confirmed with ***relevant personnel***.
	1.3 Protocols for communication between ***spatial data providers*** and the organisation are followed.
	1.4 Work is allocated to relevant personnel.
	1.5 ***Advice*** is sought from relevant personnel to assess the viability of the providers' service ***agreement***.
	1.6 ***Collection options*** are determined according to organisational guidelines.
	1.7 Data is received and processed according to ***organisational guidelines***.
	1.8 Skills and knowledge are updated to accommodate changes in data.
2Validate data supplied.	2.1 Data is assessed for ***validity*** and ***integrity*** according to specifications.
	2.2 Omissions and gaps in the spatial data are communicated and followed through to resolution with relevant personnel.
	2.3 ***OHS*** issues are considered at all times.
3Complete documentation.	3.1 ***Metadata*** is recorded according to industry standards.
	3.2 All ***required documentation*** is ***stored*** according to organisational requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- ability to relate to people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities
- analytical skills
- business negotiation
- communication skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- consult effectively with clients and colleagues
- impart knowledge and ideas through oral, written and visual means
- computer skills (high technical user level) to complete business documentation
- day-to-day human resource management
- delegation of duties
- literacy skills to:
  - assess and use workplace information
  - locate and interpret legislation and other written documentation
  - prepare and manage documentation
  - read and write technical reports
  - research and evaluate
- numeracy skills to:
  - analyse errors
  - conduct image analysis
  - perform mental calculations
  - interpret and analyse statistics
  - record with accuracy and precision
  - undertake computations
- organisational skills to:
  - coordinate technical and human resource inputs to research activities
  - prioritise activities to meet contractual requirements
- quality assurance
- spatial skills to:
  - display proficiency in the operation of spatial data capture equipment
  - exercise precision and accuracy in relation to spatial and aspatial data acquisition using electronic equipment
  - perform spatial data archival and retrieval and train others in this task
  - perform spatial data management and manipulation and train others in this task
  - perform file management and train others in this task
  - solve problems relating to height, depth, breadth, dimension, direction and position in actual operational activity and virtual representation
  - understand implications of height, depth, breadth, dimension and position to actual operational activity and virtual representation
- time management skills.

Required knowledge and understanding:

- classification systems, processes and products linked to specification
- industry standards
- information management

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REQUIRED SKILLS AND KNOWLEDGE

- legislation as it applies to the spatial industry sector
- methods of assessing existing spatial datasets and dataset sources
- need for precision and accuracy in relation to spatial data acquisition
- organisational policies and guidelines, such as pricing
- quality assurance principles
- performance evaluation procedures
- safe work practices
- spatial data capture methodologies
- spatial data management practices
- spatial data formats and structure
- spatial information principles and their application
- spatial referencing systems
- spatial technologies
- working within budgetary constraints.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment	This unit of competency could be assessed on its own or in combination with other units relevant to the job function, for example units CPPSIS5001A Plan spatial data collection and validation, CPPSIS5002A Capture new spatial data, CPPSIS5006A Integrate spatial datasets, CPPSIS5007A Maintain complex spatial data systems, and CPPSIS5008A Develop a complex spatial and aspatial database.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of: • ensuring data is sourced according to agreed processes and protocols and that it satisfies requirements • applying cost considerations • assessing and acting upon contingencies • communication and negotiation skills • managing risks and contingencies • working towards set targets • understanding spatial project deliverables

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- taking responsibility for team output.

Specific resources for assessment

Resource implications for assessment include access to:

- assessment instruments, including personal planner and assessment record book
- assignment instructions, work plans and schedules, policy documents and duty statements
- registered training provider of assessment services
- relevant guidelines, regulations and codes of practice
- suitable venue and equipment.

Access must be provided to appropriate learning and assessment support when required.

Where applicable, physical resources should include equipment modified for people with disabilities.

Context of assessment

Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.

Method of assessment

Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment).

Demonstrated competency in a range of situations, that may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace.

Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation in realistic simulated environments may be substituted.

Guidance information for assessment

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of spatial information services requirements to assess competency.

Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical).

Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff.

All practical demonstration must adhere to the safety and

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environmental regulations relevant to each State or Territory.

Where assessment is for the purpose of recognition (recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.

Assessment processes will be appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Client instructions refer to description of outputs and may be contained in:

- contracts
- memos
- tender briefs
- verbal instructions
- written instructions.

Determine specific need may be conducted via:

- response to a direction regarding scope and needs
- independent assessment.

Spatial data requirements may include:

- administration (e.g. postcodes, suburbs, and federal and state electoral counties)
- analysis of environmental, land and geographic information
- asset management
- cartographic services
- civil engineering
- digital imagery
- electricity
- emergency services management
- environmental datasets
- geographic information systems
- integrated services - environmental, land and geographic related datasets
- land ownership tenure system
- local government
- location-based services
- global positioning
- mapping facilities
- site analysis
- survey marks
- sewerage
- telecommunications
- town planning
- utility services such as water.

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Specifications refer to:	• detailed technical description of the spatial data and its qualifiers.
Relevant personnel may include:	• colleagues • registered surveyors • company personnel • staff or employee representatives • supervisors or line managers • suppliers • users.
Spatial data providers may include:	• associations • clearing houses • educational institutions • government • internal sources • non-government agencies • online services • software providers • specialist companies.
Advice may include information from:	• financial or legal specialists • internal and external personnel • management • registered surveyors • town planners.
Agreement may include:	• contract • copyright • licence • royalty contract • memorandum of understanding.
Collection options may include:	• data logging • digitising theodolite • global position system • photogrammetry • remote sensing • scanning • sonar • survey • total station.
Organisational guidelines may include:	• code of ethics • company policy • legislation relevant to the work or service function, including equal employment opportunity (EEO)

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	• manuals • OHS policies and procedures • personnel practices and guidelines outlining work roles and responsibilities.
Validity means reflecting the true state of a test result, including tests for systematic distortions such as:	• confounding bias • information/data bias • observational bias • recall bias • selection bias.
Integrity may include:	• authenticity • relevance to the project.
OHS may include:	• Australian standards • development of site safety plan • identification of potential hazards • inspection of work sites • training staff in OHS requirements • use of equipment and signage.

Metadata may include:	• summarised information about a spatial dataset that describes the characteristics of the dataset, including:
	  • availability
	  • conditions of use
	  • coordinate system datum
	  • currency
	  • date of acquisition
	  • quality
	  • source
	  • spatial data acquisition methodologies
	• version control.

Required documentation may include:	• electronic or paper-based correspondence with client • field records • final report • records of conversation • survey plots • organisational work activity sheets.
Stored may include:	• activity and sequence of activity determined to be appropriate in order to meet project objectives.

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Unit Sector(s)

Unit sector Spatial information services

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CPPSIS5002A Capture new spatial data

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to capture new data using a variety of methods. It requires the ability to plan and execute the data capture process in a supervisory capacity, incorporating technical problems and management requirements and applying appropriate solutions to a range of data collection situations. Functions would be carried out within organisational guidelines.

Application of the Unit

Application of the unit

This unit of competency supports the application of theoretical and practical analysis; organisational, team leadership and sound problem-solving skills; the ability to demonstrate initiative and enterprise; and a sound understanding of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in surveying, cartography, town planning, mapping or geographic information systems.

Licensing, legislative, regulatory and certification requirements may impact on this unit. Incorporate these requirements according to state, territory and federal legislation.

Licensing/Regulatory Information

Refer to Application of the Unit

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged, will assist in identifying employability skills requirements.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1Prepare for data collection.	1.1 Key activities and timelines are scheduled with full consideration given to specification, available resources and organisational requirements.
	1.2 ***Administrative and legal requirements*** for data collection are complied with and recorded.
	1.3 ***Appropriate persons or relevant personnel*** are informed about the project.
	1.4 ***Equipment***, ***suppliesand spatial information services*** (***SIS***) ***technologies*** are selected according to the task requirements.
	1.5 Designated responsibilities are communicated to staff to ensure clarity of understanding of the work and provide a basis for ongoing assessment.
	1.6 Skills and knowledge are updated to accommodate changes in data capture techniques.
2Gather data.	2.1 Equipment is operated according to ***manufacturer specifications***, and statutory and organisational guidelines.
	2.2 ***Entities*** are related to a ***reference system*** based on the specifications.
	2.3 Data and ***attributes*** are collected using methodologies detailed in the ***data capture methodology***.
	2.4 ***Metadata*** is documented according to accepted industry standards.
	2.5 Any discrepancies between specifications and actual activities are identified, recorded and reported.
	2.6 Administrative and legal requirements for data collection are complied with and recorded.
	2.7 Guidance is given to staff assisting in the data collection process.
	2.8 ***OHS requirements*** are planned for and adhered to.
3Use equipment.	3.1 Appropriate equipment is selected.
	3.2 Equipment is operated according to the task requirements and manufacturer specifications.
	3.3 All safety requirements are adhered to.
4Maintain equipment.	4.1 ***Operational maintenance*** of equipment is undertaken according to organisational guidelines.
	4.2 ***Contingencies*** that may affect equipment usage are reported.
	4.3 Unsafe or faulty equipment is reported and referred for

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ELEMENT	PERFORMANCE CRITERIA
	repair. 4.4 Tools and equipment are stored safely in appropriate locations and according to manufacturer specifications.
5Finalise the collection process.	5.1 Attributes and ***topological structures*** are added to spatial data according to specifications. 5.2 All data is recorded correctly and ***required documentation*** is completed according to specifications and organisational requirements. 5.3 All data and documentation are stored according to organisational requirements. 5.4 Data integrity is checked according to the validation plan.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- ability to analyse theory, concepts and statistics (high level)
- ability to relate to people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities
- change management
- communication skills to:
  - consult effectively with clients and colleagues
  - impart knowledge and ideas through oral, written and visual means
  - provide customer service
- computer skills (high technical user level) to complete business documentation
- functional application of data capture techniques
- literacy skills to:
  - assess and use workplace information
  - locate and interpret legislation and other written documentation
  - prepare and manage documentation
  - read and write technical reports
  - research and evaluate
- negotiation skills
- numeracy skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- analyse errors
- conduct image analysis
- perform mental calculations
- interpret and analyse statistics
- record with accuracy and precision
- undertake computations

- organisational skills to:
  - coordinate technical and human resource inputs to research activities
  - prioritise activities to meet contractual requirements
- planning
- project management skills
- spatial skills to:
  - display proficiency in the operation of spatial data capture equipment
  - exercise precision and accuracy in relation to spatial and aspatial data acquisition and the use of electronic equipment
  - perform spatial data archival and retrieval and train others in this task
  - perform spatial data management and manipulation and train others in this task
  - perform file management and train others in this task
  - solve problems relating to height, depth, breadth, dimension, direction and position in actual operational activity and virtual representation
  - understand implications of height, depth, breadth, dimension and position to actual operational activity and virtual representation
- team leadership
- work effectively as part of a team.

Required knowledge and understanding:

- characteristics, capabilities and limitations of tools, technology and equipment used
- customer relations guidelines
- data collection methods using electronic equipment
- information management
- legislation as it applies to the spatial industry sector
- OHS requirements
- organisational policies and guidelines
- performance evaluation
- process improvement methods
- quality assurance principles
- quality improvement tools
- reference systems and their relationship to each other
- relevant federal, state and local government laws which are applicable to the

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REQUIRED SKILLS AND KNOWLEDGE

spatial data capture methodology used

- risk assessment principles
- safe work practices
- spatial data formats, handling and structure
- spatial information principles and their application
- SIS project contingencies
- spatial technologies.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment	This unit of competency could be assessed on its own or in combination with other units relevant to the job function, for example units CPPSIS5001A Plan spatial data collection and validation, CPPSIS5005A Obtain and validate existing spatial data, CPPSIS5006A Integrate spatial datasets, CPPSIS5007A Maintain complex spatial data systems, and CPPSIS5008A Develop a complex spatial and aspatial database.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of: • applying a defined range of skills • applying known solutions to a range of problems • assessing and recording information from varied sources • demonstrating operational knowledge in relevant data capture and validation methodologies • performing a range of tasks where choice between a range of options is required • taking responsibility for own and team outputs in work and learning.
Specific resources for assessment	Resource implications for assessment include access to: • assessment instruments, including personal planner and assessment record book • assignment instructions, work plans and schedules, policy documents and duty statements

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- registered training provider of assessment services
- relevant guidelines, regulations and codes of practice
- suitable venue and equipment.

Access must be provided to appropriate learning and assessment support when required.

Where applicable, physical resources should include equipment modified for people with disabilities.

Context of assessment

Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.

Method of assessment

Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment).

Demonstrated competency in a range of situations, which may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace.

Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation in realistic simulated environments may be substituted.

Guidance information for assessment

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of SIS requirements to assess competency.

Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical).

Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff.

All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory.

Where assessment is for the purpose of recognition

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(recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.

Assessment processes will be appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Administrative and legal requirements may include:

- access protocols and obligations
- Australian standards, quality assurance and certification requirements
- award and enterprise agreements
- company OHS guidelines
- licensing arrangements
- organisational protocols for accessing physical, financial and human resources
- reimbursements
- Indigenous considerations
- relevant codes of practice
- relevant state, territory or federal legislation that affects organisational operations, including:
  - anti-discrimination and diversity
  - copyright and digital copyright
  - equal employment opportunity (EEO)
  - industrial relations
- royalty obligations
- title search processes.

Appropriate persons or relevant personnel may include:

- administrative staff
- assessors
- colleagues
- contractors
- field survey staff
- land occupiers
- land owners
- managers
- supervisors
- technicians
- trainers.

Equipment, supplies and SIS technologies may

- data logger or other mobile computing device
- data recording equipment

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include:

- digital imagery
- electronic theodolites
- handheld global positioning system (GPS)
- levels
- maps (digital or hard copy)
- measuring instruments
- non-navigational aids relevant to duties, including:
  - compass
  - clinometer
  - distance measuring wheel
- personal digital assistant
- personal computer-based digitising boards
- sonar
- tide gauge
- tools
- total station
- ultra high frequency (UHF) radio
- vehicles.

Manufacturer specifications may be found in:

- electronic format
- equipment specifications
- operator manuals
- printed product instructions and information
- spatial database
- warranty documents.

Entities may include:

- event
- object.

Reference system may include coordinate systems that are:

- global
- local
- regional.

Attributes are properties associated with a dataset and may include:

- condition
- date
- size
- type.

Data capture methodology may include:

- aerial
- conversion or translation from existing information (hard copy or digital)
- data dogging
- digitising theodolite
- direct or indirect
- field
- GPS scanning

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- manual entry
- photogrammetry
- remote sensing
- sonar
- survey
- total station.

Metadata may include:

- summarised information about a spatial dataset that describes the characteristics of the dataset, including:
  - availability
  - conditions of use
  - coordinate system
  - currency
  - date of acquisition
  - quality
  - source
  - spatial data acquisition methodologies
  - version control.

OHS requirements may include:

- Australian standards
- development of site safety plan
- identification of potential hazards
- inspection of work sites
- training staff in OHS requirements
- use of personal protective clothing
- use of safety equipment and signage.

Operational maintenance tasks may include:

- adjusting
- cleaning
- lubricating
- maintaining battery
- simple repairs
- tightening.

Contingencies may include:

- adverse weather
- equipment failure.

Topological structures may include:

- relationship between entities.

Required documentation may include:

- accident and injury reports
- authority/approval documentation
- meeting reports
- records and reports of communication
- reimbursement documentation.

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Unit Sector(s)

Unit sector	Spatial information services

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CPPSIS3005A Collect basic spatial data

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to collect basic data through a range of methods. It requires the ability to work with others in performing set task requirements within deadlines. It also requires the ability to perform a range of basic activities in the use of information technology and equipment within a spatial information handling framework. Functions would be carried out under supervision, often in a team environment, and within organisational guidelines.

Application of the Unit

Application of the unit

This unit of competency supports the application of teamwork, verbal and written workplace communication skills, and the use of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in the spatial information services (SIS) industry sector in positions such as field coordination, data collection and administration.

While no licensing, legislative, regulatory or certification requirements apply holistically to this unit at the time of publication, relevant federal, and state or territory legislation, regulations and codes of practice impact upon this unit (see unit performance criteria and range statement).

Licensing/Regulatory Information

Refer to Application of the Unit

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged, will assist in identifying employability skills requirements.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1Prepare for the task.	1.1 Requirements for the task are clarified with ***appropriate persons***.
	1.2 Equipment, supplies and ***SIS technologies*** are selected according to task requirements.
	1.3 Equipment is checked to ensure it is in safe working order.
	1.4 Skills and knowledge are updated to accommodate changes in data collection techniques.
2Gather basic data.	2.1 Data and ***attributes*** are collected using methodologies detailed in a ***data collection plan***.
	2.2 ***Metadata*** is documented according to accepted industry standards.
	2.3 Any discrepancies between specifications and actual activities are identified, recorded and reported.
	2.4 ***Administrative and legal requirements*** for data collection are complied with and recorded.
	2.5 Assistance is given to ***relevant personnel*** assisting in the data collection process.
	2.6 ***OHS requirements*** are planned for and adhered to.
3Use equipment.	3.1 Supervisor guidance is sought on the selection of appropriate equipment.
	3.2 Appropriate equipment is operated according to the task requirements and ***manufacturer specifications***.
	3.3 All safety requirements are adhered to at all times.
	3.4 Data is recorded correctly and according to specifications.
4Maintain equipment.	4.1 Supervisor guidance is sought on the manner in which equipment is to be maintained.
	4.2 ***Operational maintenance*** of equipment is undertaken according to organisational guidelines.
	4.3 ***Contingencies*** that may affect equipment usage are reported.
	4.4 Unsafe or faulty equipment is reported and referred for repair.
	4.5 Tools and equipment are stored safely in appropriate locations and according to manufacturer specifications.
5Contribute to finalising the collection process.	5.1 All ***required documentation*** is completed according to organisational requirements.
	5.2 All data and documentation are stored according to

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ELEMENT	PERFORMANCE CRITERIA
	organisational guidelines.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- ability to relate to people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities
- communication skills to:
  - discuss vocational issues effectively with colleagues
  - impart knowledge and ideas through oral, written and visual means
- computer skills (technical user level)
- literacy skills to:
  - assess and use workplace information
  - interpret and understand legal, financial and procedural requirements
  - process workplace documentation
  - read and record data
- numeracy skills to:
  - accurately record and collate
  - undertake basic computations
- organisational skills to prioritise daily activities
- spatial skills to:
  - apply understanding of height, depth, breadth, dimension and position to actual operational activity and virtual representation
  - perform basic spatial and aspatial data collection in an accurate manner
  - use spatial information technology to perform basic data collection
- work effectively as part of a team
- use a range of equipment in the field safely, accurately and as required for the task.

Required knowledge and understanding:

- basic data collection methods using electronic equipment
- spatial and aspatial data acquisition using electronic equipment
- equipment capabilities, limitations and potential problems
- basic organisational policies and guidelines, such as OHS guidelines
- basic characteristics, capabilities and limitations of tools, technology and

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REQUIRED SKILLS AND KNOWLEDGE

equipment used.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment

This unit of competency could be assessed on its own or in combination with other units relevant to the job function, for example unit CPPSIS3002A Store and retrieve basic spatial data.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- applying a defined range of skills
- applying known solutions to a range of predictable problems
- assessing and recording information from varied sources
- demonstrating operational knowledge in a moderate range of areas
- performing a range of tasks where choice between a limited range of options is required
- taking responsibility for own outputs in work and learning.

Specific resources for assessment

Resource implications for assessment include access to:

- assessment instruments, including personal planner and assessment record book
- assignment instructions, work plans and schedules, policy documents and duty statements
- registered training provider of assessment services
- relevant guidelines, regulations and codes of practice
- suitable venue and equipment.

Access must be provided to appropriate learning and assessment support when required.

Where applicable, physical resources should include equipment modified for people with disabilities.

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Context of assessment	Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.
Method of assessment	Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment). Demonstrated competency in a range of situations, that may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace. Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation in realistic simulated environments may be substituted.
Guidance information for assessment	Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of spatial information services requirements to assess competency. Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical). Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff. All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory. Where assessment is for the purpose of recognition (recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time. In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Assessment processes will be appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect

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the requirements of the competency and the work being performed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Appropriate persons may include:

- assessors
- colleagues
- managers
- supervisors
- trainers.

SIS technologies may include:

- data recording equipment
- digital imagery
- handheld global positioning system (GPS)
- maps (digital or hard copy)
- measuring instruments
- non-navigational aids relevant to duties, including:
  - compass
  - clinometer
  - distance measuring wheel
- personal digital assistant
- personal computer-based digitising boards
- tools
- ultra high frequency (UHF) radio.

Attributes are properties associated with a dataset and may include:

- condition
- date
- size
- type.

Data collection plan may include:

- data dogging
- digitising theodolite
- GPS scanning
- photogrammetry
- remote sensing
- sonar
- survey

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	• total station.
Metadata is summarised information about a spatial dataset that describes the characteristics of the dataset, including:	• availability • conditions of use • coordinate system • currency • date of acquisition • quality • source • spatial data acquisition methodologies • version control.

Administrative and legal requirements may include:	• Australian standards, quality assurance and certification requirements
	• award and enterprise agreements
	• company OHS guidelines
	• licensing arrangements
	• relevant codes of practice
	• relevant state, territory or federal legislation that affects organisational operations, including:
	  • anti-discrimination and diversity
	  • equal employment opportunity (EEO)
	  • industrial relations.

Relevant personnel may include:	• colleagues • registered surveyors • site personnel • staff or employee representatives • supervisors or line managers • suppliers • users.
OHS requirements may include:	• Australian standards • development of site safety plan • identification of potential hazards • inspection of work sites • training staff in OHS requirements • use of personal protective equipment and clothing.
Manufacturer specifications may be found in:	• electronic format • equipment specifications • operator manuals • printed product instructions and information • spatial database • warranty documents.
Operational maintenance	• adjusting

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tasks may include:	• cleaning • lubricating • tightening • maintaining battery • simple repairs.
Contingencies may include:	• adverse weather • equipment failure.
Required documentation may include:	• accident and injury reports • authority/approval documentation • meeting reports • records and reports of communication • reimbursements.
Organisational guidelines may include:	• code of ethics • company policy • legislation relevant to the work or service function • manuals • OHS policies and procedures • personnel practices and guidelines outlining work roles and responsibilities.

Unit Sector(s)

Unit sector	Spatial information services

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BSBCUS401A Coordinate implementation of customer service strategies

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to advise on, carry out and evaluate customer service strategies, including the design of improvement strategies based on feedback. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals with a broad knowledge of customer service strategies who contribute well developed skills in addressing customer needs and problems. They may have responsibility to provide guidance or to delegate aspects of these tasks to others.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Advise on customer service needs	1.1. Clarify and accurately assess ***customer needs*** using appropriate ***communication techniques*** 1.2. Diagnose problems matching service delivery to ***customers*** and develop options for improved service within ***organisational requirements*** 1.3. Provide relevant and constructive advice to promote the improvement of customer service delivery 1.4. Use ***business technology*** and/or ***online services*** to structure and present information on customer service needs
2. Support implementation of customer service strategies	2.1. Ensure customer service strategies and opportunities are promoted to ***designated individuals and groups*** 2.2. Identify and allocate available budget resources to fulfil customer service objectives 2.3. Promptly action ***procedures to resolve customer difficulties*** and ***complaints*** within organisational requirements 2.4. Ensure that decisions to implement ***strategies*** are taken in consultation with designated individuals and groups
3. Evaluate and report on customer service	3.1. Review client satisfaction with service delivery using verifiable data in accordance with organisational requirements 3.2. Identify and report changes necessary to maintain service standards to designated individuals and groups 3.3. Prepare conclusions and recommendations from verifiable evidence and provide constructive advice on future directions of client service strategies 3.4. Maintain systems, records and reporting procedures to compare changes in customer satisfaction

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- literacy skills to read a variety of texts, to prepare general information and papers, and to write formal and informal letters according to target audience
- planning skills to develop implementation schedules
- problem-solving skills to diagnose organisational problems relating to customer services.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - environmental issues
  - occupational health and safety (OHS)
- principles of customer service
- organisational business structure, products and services
- product and service standards and best practice models.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • identifying needs and priorities of the organisation in delivering services to customers • responding to and reporting on customer feedback • designing strategies to improve delivery of products and services • knowledge of the principles of customer service.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of customer complaints, feedback and strategies.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of documentation reporting changes necessary to maintain service standards • analysis of responses to case studies and scenarios • demonstration of techniques • observation of presentations • oral or written questioning to assess knowledge of customer service techniques and strategies • review of systems, records and reporting procedures to compare changes in customer satisfaction.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • sales units • other customer service units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Customer needs may relate to:	• accuracy of information • advice or general information • complaints • fairness/politeness • further information • making an appointment • prices/value • purchasing organisation's products and services • returning organisation's products and services • specific information
Communication techniques may include:	• analysing customer satisfaction surveys • analysing quality assurance data • conducting interviews • consultation methods, techniques and protocols • making recommendations • obtaining management decisions • questioning • seeking feedback to confirm understanding • summarising and paraphrasing
Customers may include:	• corporate customers • individual members of the organisation • individual members of the public • internal or external • other agencies
Organisational requirements may include:	• access and equity principles and practice • anti-discrimination and related policy • confidentiality and security requirements • defined resource parameters • ethical standards • goals, objectives, plans, systems and processes • legal and organisational policies, guidelines

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RANGE STATEMENT	
	and requirements • OHS policies, procedures and programs • payment and delivery options • pricing and discount policies • quality and continuous improvement processes and standards • quality assurance and/or procedures manuals • replacement and refund policy and procedures • who is responsible for products or services
Business technology may include:	• answering machine • binder • computer • fax machine • photocopier • printer • shredder • telephone
Online services may include:	• access to product database by customers online • access to purchase, delivery and account records • call/contact centre • online ordering • online payments • online registration • quick/reasonable response • two-way communication online
Designated individuals and groups may include:	• colleagues • committee • customers • external organisation • line management • supervisor
Procedures to resolve customer difficulties may include:	• external agencies (e.g. Ombudsman) • item replacement • referrals to supervisor • refund of monies • review of products or services • using conflict management techniques
Customer complaints may	• administrative errors such as incorrect invoices or prices

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RANGE STATEMENT	

include:	• customer satisfaction with service quality
	• damaged goods or goods not delivered
	• delivery errors
	• products not delivered on time
	• service errors
	• specific e-business problems and issues:
	  • difficulty accessing services
	  • inactive links
	  • not appreciating differing hardware and software
	  • services not available
	  • supply errors such as incorrect product delivered
	  • time taken to access services
	  • unfriendly website design
	  • website faults
	• warehouse or store room errors such as incorrect product delivered

Customer service ***strategies*** may include:	• courtesy/politeness • delivery times • merchandise characteristics • price offers • product/refund guarantees • product/service availability

Unit Sector(s)

Unit sector	

Competency field

Competency field	Stakeholder Relations - Customer Service

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Co-requisite units

Co-requisite units		

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UEGNSG202A Construct and lay distribution pipelines

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor **1**)

This Competency Standard Unit covers the construction and laying of pipelines in a utilities industry workplace. This competency standard refers to the relevant services; appropriate persons; the relevant materials required to lay distribution pipelines; tools and equipment; safe working procedures and the relevant legislative requirements.

Application of the Unit

Application of the Unit **3**)

This competency standard shall apply to any basic and safe work site where Gas Industry operations occur. It could also apply, where applicable to other workplaces in the electricity supply industry (transmission and distribution and generation), the electrotechnology industry and the water industry, subject to all Occupational Health and Safety and duty of care requirements being met for the workplace.

Licensing/Regulatory Information

License to practice **3.1**)

The skills and knowledge described in this unit are not subject to licence regulation other than those directly related to Occupational Health and Safety, gas/electricity/water industry safety and compliance, industrial relations, environmental protection, telecommunications, anti discrimination and training.

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License to practice **3.1**)

Commonwealth, State/Territory or Local Government legislation and regulations may exist that limits the age of those who can operate certain equipment.

Pre-Requisites

Prerequisite Unit(s) **2**)

Competencies **2.1**)

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed:

Nil

Employability Skills Information

Refer to the Evidence Guide

Elements and Performance Criteria Pre-Content

5) Elements describe the essential outcomes of a competency standard unit

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA	
1 Prepare for the laying of a distribution pipeline	1.1	Plans, specifications and work instructions are received and confirmed
	1.2	Alignment of main and other relevant requirements are defined and established procedures are followed and the work to be

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ELEMENT	PERFORMANCE CRITERIA	
		performed is discussed with all persons to establish and confirm the work schedule
	1.3	OHS, environmental and sustainable energy policies and procedures to be followed for the work to be performed are received and confirmed
	1.4	Suggestions to assist with the laying of distribution pipelines work are made to others involved in the work
	1.5	Hazards are identified, OHS risks assessed and control measures are prioritised, implemented and monitored including emergency exits kept clear according to established procedures
	1.6	Scope of responsibility under the relevant work permit is received and confirmed according to requirements and established procedures with relevant persons
	1.7	Resources and materials including, appropriately qualified persons, equipment, tools and personal protective equipment required for the job are obtained and in working order according to established procedures
	1.8	Relevant responsibilities associated with First Aid and other related work safety procedures at the worksite are confirmed in accordance with requirements and established procedures to ensure safety measures are followed in the event of an incident
	1.9	Client issues are referred to appropriate persons in accordance with industry and community standards
	1.10	Site is prepared according to given instructions and the work schedule to ensure a quality outcome and to minimise risk and damage to property, commerce and individuals in accordance with established procedures
	1.11	Road signs, barriers and warning devices are positioned in accordance with given instructions

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ELEMENT	PERFORMANCE CRITERIA	
		and requirements including traffic management plans
2 Carry out the construction of a distribution pipeline	2.1	OHS policies and procedures and safe work practices are followed to eliminate or minimise incidents and hazards
	2.2	Lifting, climbing, working in confined spaces, excavations, trenches or aloft, and use of power tools, techniques and practices are safely followed in accordance with given instructions and according to requirements confirmed to minimise OHS risks
	2.3	Operational knowledge for carrying out pipeline construction work is confirmed to ensure completion in an agreed timeframe and to quality standards with a minimum of waste according to requirements and established procedures
	2.4	Pipeline construction work is performed in accordance with given instructions and established procedures
	2.5	Hazard warnings and safety signs are recognised and hazards are assessed and OHS risks are reported to the authorised persons for directions according to established procedures
	2.6	Non-routine events are referred to the authorised persons for directions according to established procedures
	2.7	Problems associated with the construction of a distribution pipeline are dealt with using acquired known solutions and skills related to routine procedures to ensure work instructions and established procedures are met
	2.8	Ongoing checks of work quality are undertaken in accordance with given instructions and established procedures

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ELEMENT	PERFORMANCE CRITERIA	
3 Complete the construction of a distribution pipeline	3.1	Work undertaken is checked against work schedule and anomalies reported to authorised persons in accordance with established procedures
	3.2	Accidents and incidents are actioned and reported to authorised persons in accordance with established procedures
	3.3	Work site is rehabilitated, cleaned up and made safe in accordance with given instructions and established procedures
	3.4	Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures
	3.5	Appropriate persons are notified of work completion according to established procedures
	3.6	Work completion records, report forms and data sheets are completed accurately in accordance with given instructions and established procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

6) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices for constructing and laying distribution pipelines. The extent of the essential knowledge and associated skills (EKAS) required is given in Volume 2 - Part 2.2 EKAS. It forms an integral part of this unit.

G 2.1.1	Working in the gas sector
G 2.1.2	Identify roles of statutory authorities
G 2.1.3	Identify employment roles and responsibilities

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REQUIRED SKILLS AND KNOWLEDGE

G 2.1.4	Apply relevant OHS regulations, policies and procedures
G 2.1.5	Maintain safe, clean and healthy workplace
G 2.1.6	Work safely with hazardous materials and equipment
G 2.1.7	Apply safe manual handling techniques in the workplace
G 2.1.8	Control traffic at the work-site
G 2.1.9	Respond to emergency and accident situations
G 2.1.10	Apply relevant environmental legislation, regulations and codes of practice
G 2.1.11	Protect and maintain the environment
G 2.1.12	Communicate in the workplace
G 2.1.13	Communicate effectively in a team
G 2.1.14	Read and interpret workplace documents
G 2.1.15	Complete routine workplace forms, memos and reports
G 2.1.16	Identify requirements of work activity
G 2.1.17	Apply basic planning skills
G 2.1.18	Conduct tasks to complete work activity
G 2.1.19	Review work activity
G 2.1.20	Customer relations
G 2.1.21	Problem solving
G 2.1.22	Confined spaces
G 2.1.23	Work site environmental compliance
G 2.1.24	Work site environmental impact

AND one or more of the following depending on pipe

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REQUIRED SKILLS AND KNOWLEDGE

type:

If undertaking the laying of nylon pipe and PE pipe

G 2.2.12 Identify nylon pipeline, fittings and accessories

G 2.2.13 Join nylon pipeline and fittings

G 2.2.14 Repair damaged nylon pipe

G 2.2.15 Determine depth of pipeline in ground

G 2.2.16 Install nylon pipe

G 2.2.17 Identify polyethylene pipeline, fittings and accessories

G 2.2.18 Join PE pipes and fittings

G 2.2.19 Repair damaged PE pipeline

If undertaking the laying of cast iron and steel pipe

G 2.2.20 Identify cast iron pipe and fittings

G 2.2.21 Work with cast iron pipe and fittings

G 2.2.22 Repair or replace cast iron pipeline

G 2.2.23 Identify steel pipeline, fittings and accessories

G 2.2.24 Work with steel pipeline and fittings

G 2.2.25 Cut out, repair and replace steel pipeline

G 2.2.26 Determine depth of pipeline in ground

If undertaking the laying of copper pipe

G 2.2.27 Identify copper pipeline, fittings and accessories

G 2.2.28 Bend and join copper pipeline and fittings

G 2.2.29 Repair damaged copper pipe

G 2.2.30 Determine depth of pipeline in the ground

G 2.2.31 Install copper pipe

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Evidence Guide

EVIDENCE GUIDE

8) The Evidence Guide forms an integral part of this Unit and shall be used in conjunction with all components parts of the unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

8.**1**)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry regulatory policy in this regard.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature so as to minimise error in judgment.

Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practiced. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

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EVIDENCE GUIDE

Critical aspects of evidence required to demonstrate competency in this unit

8.2)

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines UEG06'. Evidence shall also comprise.

- A representative body of Performance Criteria demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
  - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and range
  - Apply sustainable energy principles and practices as specified in the Performance Criteria and range
  - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit to such an extent that the learner's performance outcome is reported in accordance with the preferred approach; namely a percentile graded result, where required by the regulated environment
  - Demonstrate an appropriate level of skills enabling employment
  - Conduct work observing the relevant anti discrimination legislation, regulations, polices and workplace procedures
  - Demonstrate performance across a representative range of contexts from the prescribed items below.

Range of tools/equipment/materials/procedures/ workplaces/other variables		
Group No	**The minimum number of items on which skill is to be demonstrated**	**Item List**

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EVIDENCE GUIDE

A	All	Interpret technical drawings and symbols Isolate, vent and purge gas pipeline systems Operation of gas detector Emergency response procedures Operate service locator Use and interpret Dial Before You Dig report or its equivalent
B	At least 2	Excavation Trenching Stich bore Horizontal drilling Directional drilling
C	At least 3	Nylon (Polyamide) pipeline laying techniques Nylon gluing Connection of Nylon to PE Practical application of AS3723 'installation and maintenance of plastic pipe systems for gas'
D	At least 3	PE pipeline laying techniques PE Electrofusion PE Butt Fusion Compression couplings or flanges Connection of PE to Nylon Practical application of AS3723 'installation and maintenance of plastic pipe systems for gas'
E	At least 3	UPVC pipeline laying techniques UPVC solvent cemented joints

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EVIDENCE GUIDE

		UPVC moulded joints UPVC compression couplings or flanges Connection of UPVC to steel Practical application of AS3723 'installation and maintenance of plastic pipe systems for gas'
F	At least 2	Steel pipeline coating repair Steel pipeline coating testing (Jeeper) Steel field joint coating
G	At least 3	Connection of PE to Steel mains Steel mains welding Steel mains repair Sleave application Clamp application Hot tap and stopple Working knowledge of AS1697 Working knowledge of AS2885
H	All	Work utilising relevant OHS legislation, regulations, codes of practice, policies and procedures Working knowledge of AS2865 Maintain a safe and clean workplace Work safely with hazardous materials and equipment Apply safe manual handling techniques Communicate effectively in the workplace Apply basic planning skills

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EVIDENCE GUIDE

I	At least one occasion	Deal with an unplanned event by drawing on essential knowledge and associated skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items

Context of and specific resources for assessment

8.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this Competency Standard Unit.
- Appropriate environmental regulation and work practices.
- Appropriate organisational requirements.
- Appropriate work environment, equipment and tools.

In addition to the resources listed above, in Context of and specific resources for assessment, evidence should show demonstrated competency in constructing and laying distribution pipelines.

Assessment of this competency must also be undertaken in either an actual workplace or under a simulated work environment. Assessment must also integrate the key competencies.

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EVIDENCE GUIDE

Method of assessment

8.4)

This Competency Standard Unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:
Competent performance with inherent safe working practices is expected in the Industry to which this Competency Standard Unit applies. This requires that the specified Essential Knowledge and Associated Skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and associated skills described in this unit.

Concurrent assessment and relationship with other units

8.5)

There are no recommended concurrent assessments with this unit, however in some cases efficiencies may be gained in terms of learning and assessment effort being concurrently managed with allied Competency Standard Units where listed.

UEGNSG102A	Carry out work activities in a utilities industry work environment
UEGNSG103A	Comply with workplace OHS procedures and practices
UEGNSG104A	Comply with environmental policies and procedures
UEGNSG105A	Establish the work site

Key Competencies

8.6)

Evidence that particular key competencies have been achieved within this Competency Standard Unit is in the context of the following Performance Criteria of evidence. See Volume 2, Part 4 for an explanation of Key Competencies and levels of this Training Package.

Key Competencies	Example of Application	Performance Level
How are ideas and information communicated within this	Refer to the following Performance Criteria for examples of application: 1.4; 2.6; 3.5	1

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EVIDENCE GUIDE

competency?		
How can information be collected, analysed and organised?	Refer to the following Performance Criteria for examples of application: 1.5; 2.5; 3.1; 3.6	2
How are activities planned and organised?	Refer to the following Performance Criteria for examples of application: 1.2	1
How is team work used within this competency?	Refer to the following Performance Criteria for examples of application: 1.2; 1.4	2
How are mathematical ideas and techniques used?	Refer to the following Performance Criteria for examples of application:	N/A
How are problem solving skills applied?	Refer to the following Performance Criteria for examples of application:	N/A
How is use of technology applied?	Refer to the following Performance Criteria for examples of application:	N/A

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EVIDENCE GUIDE

Skills Enabling Employment

8.**7**)

Evidence that competency in this unit incorporates skills enabling employment is in the context of the following performance. See Volume 2, Part 5 for definitions and an explanation of skills enabling employment.

Skills for Employment		**Example of Application**
1	Developing and using skills within a real workplace	Refer to the following Performance Criteria for examples of application: All
2	Learning to learn in the workplace	Refer to the following Performance Criteria for examples of application: 1.1; 1.5
3	Reflecting on the outcome and process of work task	Refer to the following Performance Criteria for examples of application: 3.1; 3.6
4	Interacting and understanding of the context of the work task	Refer to the following Performance Criteria for examples of application: 1.2; 2.5; 2.8; 3.3
5	Planning and organising the meaningful work task	Refer to the following Performance Criteria for examples of application: 1.4; 1.5; 1.7
6	Performing the work task in non-routine or contingent situations	Refer to the following Performance Criteria for examples of application: 2.6; 2.7

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Range Statement

RANGE STATEMENT

7) This relates to the competency standard unit as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.

This Competency Standard Unit shall/may be demonstrated in relation to the construction and laying of distribution pipelines.

The following constants and variables included in the Element/Performance Criteria in this unit are fully described in the Definitions Section of this volume and form an integral part of the Range Statement of this unit:

Services (2)

Appropriate persons (2)

Materials (2)

Tools and equipment (2)

Safe working procedures (2)

Legislative requirements (2)

Unit Sector(s)

Not Applicable

Literacy and numeracy skills

Literacy and numeracy skills	**2.2**) Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy' Reading 3 Writing 3 Numeracy 3

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Competency Field

Competency Field **4**)

Distribution.

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TLID1107C Conduct specialised forklift operations

Modification History

Not applicable.

Unit Descriptor

This unit involves the skills and knowledge required to operate a forklift with specialised attachments or all-terrain equipment, including checking attachments and worksite for suitability, selecting the type of forklift and accessories for required load shifting tasks, and shifting load and completing work in accordance with operational requirements. Assessment of this unit will usually be undertaken within a licensing examination conducted by, or under the authority of, the relevant state/territory OH&S authority.

Application of the Unit

Specialised operation of a forklift must be carried out in compliance with the licence requirements and regulations of the relevant state/territory authority.
Specialised operation of a forklift is performed under some supervision, generally within a team environment. It involves the application of equipment operation principles and procedures to maintain the safety and specialised operation of a forklift in a wide variety of operational contexts.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not applicable.

Employability Skills Information

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this competency is packaged will assist in identifying employability skill requirements.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.
Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 **Check attachments and worksite for suitability**	1.1 Suitable work site is selected for operations
	1.2 Work area is checked for overhead obstructions and proximity to service delivery lines
	1.3 Barriers or warning signs are erected in areas subject to passing traffic
	1.4 Attachments and platforms are securely fixed to carriage or tines
	1.5 Personnel support platforms are inspected to ensure compliance with the relevant Australian Standard
2 **Select type of forklift and accessories for the required workplace task**	2.1 Special equipment, accessories or attachments are identified to match load characteristics and work requirements
	2.2 Appropriate specialised equipment is selected
	2.3 Existing attachments are removed and stored according to workplace procedures
	2.4 Specialised equipment is fitted according to manufacturers instructions and workplace procedures
	2.5 Designated staff are notified regarding specialist operations
3 **Shift load and complete work**	3.1 Equipment is operated within safe working limits and to maximise efficiency of operations
	3.2 Load is lifted, carried and set down in accordance with workplace and manufacturers procedures and regulatory requirements
	3.3 Documentation is completed reporting any damage or faults to goods or equipment
	3.4 Specialist equipment and forklift are returned to appropriate storage/parking area

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Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

Relevant duty of care requirements pertaining to the specialised operation of a forklift

Relevant OH&S and environmental procedures and regulations

Workplace operating procedures

Forklift controls, instruments and indicators and their use

Types of forklift accessories and ancillary equipment, their purposes and procedures for their use

Handling procedures for forklifts involved in specialised operations

Procedures to be followed in the event of an operational emergency

Operating hazards and related defensive driving and hazard control techniques

Engine power management and safe operating strategies

Efficient driving techniques

Pre-operational checks carried out on forklift and accessories and related action

Site layout and obstacles

Principles of stress management when driving a forklift

Required skills:

Communicate effectively with others when conducting specialised forklift operations

Read and interpret instructions, procedures, information and signs relevant to specialised forklift operations

Interpret and follow operational instructions and prioritise work

Complete documentation related to specialised forklift operations

Operate electronic communication equipment to required protocol

Work collaboratively with others when conducting specialised forklift operations

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Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others

Promptly report and/or rectify any identified problems, faults or malfunctions that may arise when conducting specialised forklift operations in accordance with regulatory requirements and workplace procedures

Implement contingency plans for unexpected events that may occur when conducting specialised forklift operations

Apply precautions and required action to minimise, control or eliminate hazards that may exist during specialised forklift operations

Monitor work activities in terms of planned schedule

Modify activities depending on differing operational contingencies, risk situations and environments

Apply fatigue management knowledge and techniques

Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment

Operate and adapt to differences in equipment in accordance with standard operating procedures

Select and use required personal protective equipment conforming to industry and OH&S standards

Identify points of balance and safe lifting positions on a range of loads when operating a forklift (including accessories)

Monitor performance of equipment

Service equipment in terms of maintenance schedule and standard operating procedures

Check and replenish fluids and carry out lubrication processes in the course of work activities

Evidence Guide

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The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying: the underpinning knowledge and skills relevant legislation and workplace procedures other relevant aspects of the range statement
Context of and specific resources for assessment	Performance is demonstrated consistently over a period of time and in a suitable range of contexts Resources for assessment include: a range of relevant exercises, case studies and other simulated practical and knowledge assessment, and/or access to an appropriate range of relevant operational situations in the workplace In both real and simulated environments, access is required to: relevant and appropriate materials and/or equipment, and/or applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
Method of assessment	Assessment of this unit must be undertaken by a registered training organisation As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests Practical assessment must occur: through appropriately simulated activities at the registered training organisation, and/or in an appropriate range of situations in the workplace

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Types of forklift may include:	counterbalance trucks reach trucks pallet trucks container-handling heavy forklifts vacuum top frame
Specialised forklift operations may be carried out in typical forklift operational situations, including:	operations conducted at day or night typical weather conditions on the open road on a private road or worksite while at a workplace
Customers may be:	internal or external
Workplaces may comprise:	large, medium or small worksites
Specialised forklift may be used to assist in a range of workplace tasks, including:	stock/goods/container handling loading and unloading vehicles stacking stock and goods lifting and moving equipment transporting materials and goods in a workplace
Work may be conducted in:	restricted spaces exposed conditions controlled or open environments
Loads to be shifted may require:	special precautions
Specialised forklift operations may involve the use of a range of attachments and accessories, including:	spikes drum carriers bale carriers tines

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	personnel carriers high reaching pantograph jibs paper clamps hooks side lifters
Loads to be shifted may be:	irregularly shaped packaged or unpackaged labelled or unlabelled palleted or unpalleted containerised
Personnel in the work area may include:	workplace personnel site visitors contractors official representatives
Forklift operational procedures may include:	starting a forklift (including pre-start checks) steering and manoeuvring a forklift accelerating and braking positioning and stopping a forklift reversing a forklift operating forklift controls, instruments and indicators using defensive driving techniques managing engine performance
Pre-operational checks may include but are not limited to:	visual checking of forklift and its associated accessories and equipment checking and topping up of fluid levels checks of tyres checks of operation of forklift lights and indicators checks of brakes
Post-operational checks may include but are	parking in a safe place

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not limited to:	shutting down forklift lowering all equipment visually checking for faults or damage
Hazards may include (examples only):	wet and iced operating surfaces oil on operating surface faulty brakes workplace obstacles and other operational equipment and vehicles damaged loads and pallets other personnel in work area
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	company procedures enterprise procedures organisational procedures established procedures
Personal protective equipment may include:	gloves safety headwear and footwear safety glasses two-way radios high visibility clothing
Information/documents may include:	goods identification numbers and codes, including IMDG markings and HAZCHEM signs manifests, bar codes, picking slips, merchandise transfers, stock requisitions, goods and container identification Australian Standard 2359 - Industrial Truck Code manufacturers specifications for forklift and associated accessories and equipment operations and service record book or log workplace procedures and policies for the operation of forklifts supplier and/or client instructions material safety data sheets regulatory requirements concerning the use

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	of forklifts
	award, enterprise bargaining agreement, other industrial arrangements
	standards and certification requirements
	quality assurance procedures
	emergency procedures
Applicable procedures and codes may include:	relevant state/territory regulations pertaining to the operation of forklifts
	relevant codes and standards, including Australian Standard 2359 - Industrial Truck Code
	relevant state/territory OH&S legislation
	relevant state/territory fatigue management regulations
	relevant state/territory environmental protection legislation

Unit Sector(s)

Not applicable.

Competency Field

D - Load Handling

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BSBCUS301A Deliver and monitor a service to customers

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to identify customer needs and monitor service provided to customers. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals who are skilled operators and apply a broad range of competencies in various work contexts. They may exercise discretion and judgement using appropriate theoretical knowledge of customer service to provide technical advice and support to customers over either a short or long term interaction.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify customer needs	1.1. Use ***appropriate interpersonal skills*** to accurately identify and clarify ***customer needs and expectations*** 1.2. Assess customer needs for urgency to determine priorities for service delivery in accordance with ***organisational requirements*** 1.3. Use ***effective communication*** to inform customers about available choices for meeting their needs and assist in the selection of preferred options 1.4. Identify limitations in addressing customer needs and seek appropriate assistance from ***designated individuals***
2. Deliver a service to customers	2.1. Provide prompt service to customers to meet identified needs in accordance with organisational requirements 2.2. Establish and maintain appropriate rapport with customers to ensure completion of quality service delivery 2.3. Sensitively and courteously handle ***customer complaints*** in accordance with organisational requirements 2.4. Provide assistance or respond to customers with ***specific needs*** in accordance with organisational requirements 2.5. Identify and use available ***opportunities*** to promote and enhance services and products to customers
3. Monitor and report on service delivery	3.1. Regularly review customer satisfaction with service delivery using ***verifiable evidence*** in accordance with organisational requirements 3.2. Identify opportunities to enhance the quality of service and products, and pursue within organisational requirements 3.3. Monitor procedural aspects of service delivery for effectiveness and suitability to customer requirements 3.4. Regularly seek customer feedback and use to improve the provision of products and services 3.5. Incorporate evidence of customer satisfaction in decisions to modify products or services, ensuring they are within organisational requirements 3.6. Ensure reports are clear, detailed and contain recommendations focused on critical aspects of

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ELEMENT	PERFORMANCE CRITERIA
	service delivery

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to read and understand a variety of texts; to prepare general information and papers according to target audience; and to edit and proofread texts to ensure clarity of meaning and accuracy of grammar and punctuation • technology skills to select and use technology appropriate to a task • communication skills to monitor and advise on customer service strategies • problem-solving skills to deal with customer enquiries or complaints • analytical skills to identify trends and positions of products and services.
Required knowledge

• key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  • anti-discrimination legislation
  • ethical principles
  • codes of practice
  • privacy laws
  • financial legislation
  • occupational health and safety (OHS)
• organisational policy and procedures for customer service including handling customer complaints
• service standards and best practice models
• public relations and product promotion
• techniques for dealing with customers, including customers with specific needs.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • identifying needs and priorities of customers • distinguishing between different levels of customer satisfaction • treating customers with courtesy and respect • responding to and reporting on, customer feedback • knowledge of organisational policy and procedures for customer service.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of customer complaints • examples of documents relating to customer service standards and policies.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of reports on customer service delivery • analysis of responses to case studies and scenarios • demonstration of techniques • oral or written questioning to assess knowledge of customer service strategies.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • sales units • other customer service units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Appropriate interpersonal skills may include:	• listening actively to what the customer is communicating • providing an opportunity for the customer to confirm their request • questioning to clarify and confirm customer needs • seeking feedback from the customer to confirm understanding of needs • summarising and paraphrasing to check understanding of customer message • using appropriate body language
Customers may include:	• corporate customers • individual members of the organisation • individual members of the public • internal or external • other agencies
Customer needs and expectations may include:	• accuracy of information • advice or general information • complaints • fairness/politeness • further information • making an appointment • prices/value • purchasing organisation's products and services • returning organisation's products and services • specific information
Organisational requirements may include:	• access and equity principles and practice • anti-discrimination and related policy • defined resource parameters • goals, objectives, plans, systems and processes • legal and organisational policies, guidelines and requirements • OHS policies, procedures and programs

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RANGE STATEMENT	
	• payment and delivery options • pricing and discount policies • quality and continuous improvement processes and standards • quality assurance and/or procedures manuals • replacement and refund policy and procedures • who is responsible for products or services
Effective communication may include:	• giving customers full attention • maintaining eye contact, except where eye contact may be culturally inappropriate • speaking clearly and concisely • using active listening techniques • using appropriate language and tone of voice • using clear written information/communication • using non-verbal communication e.g. body language, personal presentation (for face-to-face interactions) • using open and/or closed questions
Designated individuals may include:	• colleagues • customers • line management • supervisor
Customer complaints may include:	• administrative errors such as incorrect invoices or prices • customer satisfaction with service quality • damaged goods or goods not delivered • delivery errors • product not delivered on time • service errors • warehouse or store room errors such as incorrect product delivered
Specific needs of customers may relate to:	• age • beliefs/values • culture • disability • gender • language • religious/spiritual observances
Opportunities to promote and enhance services and products	• extending time lines • packaging procedures

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RANGE STATEMENT	
may include:	• procedures for delivery of goods • returns policy • system for recording complaints • updating customer service charter
Verifiable evidence may include:	• customer satisfaction questionnaires • audit documentation and reports • quality assurance data • returned goods • lapsed customers • service calls • complaints

Unit Sector(s)

Unit sector	

Competency field

Competency field	Stakeholder Relations - Customer Service

Co-requisite units

Co-requisite units		

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PUAFIR306B Render hazardous materials incidents safe

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

This unit covers the competency required to safely combat incidents involving hazardous materials.

'Hazardous Materials' is a generic term used to refer to an incident involving dangerous goods and hazardous substances.

Application of the Unit

Application of the Unit

The application of this unit in the workplace - the environments, complexities and situations involved - will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

This text will be useful for the purposes of job descriptions, recruitment advice or job analysis; where possible, it will not be too job specific to allow other industries to import it into other Training Packages, where feasible.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

PUAFIR201B Prevent injury

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Identify and handle*hazardousmaterials***	1.1 Pre-incident plans, site control and ***containment*** plan and directives from supervisor are identified and implemented 1.2 Personal protective clothing and ***equipment*** appropriate to the types of hazards reported, are selected and worn 1.3 The incident is approached using care and caution and a safe distance is maintained in accordance with the organisation's ***procedures*** and/or advice from appropriate authorities 1.4 Dangerous goods and hazardous substances are identified from a safe distance and information conveyed to the supervisor in accordance with the organisation's procedures 1.5 Information on hazards and handling procedures for the identified substance is obtained in accordance with the organisation's procedures 1.6 Suitability of personal protective clothing and equipment is re-assessed in accordance with information received 1.7 Dangerous goods and hazardous substances are handled according to the organisation's procedures 1.8 Assistance is provided in obtaining ***samples*** according to procedures and/or advice from other authorities
2. **Assist with establishing hazard control and decontamination zones**	2.1 Individual's responsibilities within the organisation's control plan are identified and followed 2.2 The scene is secured and hazard control and ***decontamination*** zones are established according to the organisation's procedures 2.3 Evacuation procedures are implemented, if directed, to protect life in accordance with the organisation's procedures 2.4 Assistance is provided to control personnel and equipment entering and leaving hazard control and decontamination zones in accordance with the organisation's procedures 2.5 Records are kept of personnel and equipment as they enter and leave hazard control and

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ELEMENT	PERFORMANCE CRITERIA
	decontamination zones
3. **Contain and recover hazardous materials**	3.1 Appropriate containment strategies and resources are identified and implemented
	3.2 Hazardous materials are diluted and/or contained in accordance with procedures and/or advice from appropriate authorities
	3.3 Hazardous materials are recovered from the incident site according to guidelines and procedures from the appropriate authorities
4. **Assist with decontaminating personnel and equipment**	4.1 Personnel and equipment are decontaminated immediately following contamination, or possible contamination in accordance with the organisation's procedures and Occupational Health and Safety guidelines
	4.2 Operations are completed, equipment collected, decontaminated and cleaned where appropriate and serviced in accordance with the organisation's procedures
	4.3 Contamination incidents are recorded and reported to the appropriate personnel in accordance with the organisation's procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

follow instructions and procedures
use relevant equipment
record information
work as member of a team
hazard assessments
appropriate control techniques
breathing apparatus procedures

Required Knowledge

organisation policies and procedures
legislation relevant to the organisation
roles and responsibilities of agencies involved
types of hazards and safe handling techniques
methods of identifying hazardous materials
principles of incident control
decontamination principles and procedures
containment techniques
breathing apparatus procedures
the nature and properties of hazardous materials

Evidence Guide

EVIDENCE GUIDE

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EVIDENCE GUIDE

Critical aspects for assessment and evidence required to demonstrate competency in this unit	It is essential for this unit that competence be demonstrated in: hazardous materials identification implementing appropriate standard operating procedures compliance with relevant legislation demonstration of safe working practices assisting in the establishment of incident control containing and recovering hazardous materials undertaking decontamination procedures **Consistency in performance** Evidence will need to be gathered over a period of time across a range of variables appropriate to organisation roles
Context of and specific resources for assessment	**Context of assessment** Simulations or exercises and/or a series of tasks are required to demonstrate competence in this unit. This may involve setting scenarios to be completed either individually or as a member of a team. Written or verbal questions should be used to support gathering of evidence **Specific resources for assessment** Assessment of this competency will require access to relevant transport, communication and Hazmat equipment
Guidance information for assessment	Information that will assist or guide assessment will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

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Range Statement

RANGE STATEMENT

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

Identification of hazardous materials must include	Hazmat information United Nations numbers proper shipping names product names or trade names chemical names and chemical abstract service numbers dangerous goods class labels packing groups emergency information panels placarding storage manifests transport documents visual signs and chemical indicators colour coding (eg. gas cylinders)
Hazardous materials information sources must include	HAZCHEM Emergency Action Codes emergency procedures guides material safety data sheets technical specialist
and may also include	emergency response guide books National Fire Protection Association Codes European Marking ADR hazard identification numbers electronic databases HAZMAT Action Guides safe storage and information handling
Control zones must include	area of likely contamination (hot zone) area of operations (warm zone) support zone (cold zone)
Procedures must include	organisation procedures

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RANGE STATEMENT

and may also include	OH&S practices and procedures government organisational procedures company or organisational procedures emergency management evacuation environmental gas plume modelling
Equipment for containment and recovery may include	Hazbins - hazardous materials recovery bins sealable drums original containers shipping containers absorbent materials protective clothing and equipment plugs and patches booms pipes extraction equipment and machinery hand implements earth moving equipment spraying equipment pumps non-sparking tools intrinsically safe tools
Neutralising and diluting agents may include	water acids and bases bicarbonate of soda lime
Decontamination must include	wet decontamination techniques combination of wet and dry dry decontamination techniques decontamination techniques

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RANGE STATEMENT

	emergency decontamination
Decontamination areas must include	holding area wash area disrobing and rest area
Sampling may include	gaseous samples liquid samples solid samples
Analysis may include	sampling equipment external organisation assistance
Organisations that assist operations may include	police ambulance local government chemical companies emergency services government departments

Unit Sector(s)

Not applicable.

Corequisite Unit/s

Co-requisite Unit/s	PUAFIR308B Employ personal protection at a hazardous material incident

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UEPOPS316A Operate and Monitor Boiler Steam/Water Cycle

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor **1**)

This unit deals with the skills and knowledge required to operate, inspect and monitor boiler steam / water cycle.

Application of the Unit

Application of the Unit **3**)

This unit is intended to augment formally acquired competencies. It is suitable for employment-based programs under an approved contract of training.

License to practise **3.1**)

The skills and knowledge described in this unit do not require a licence to practise in the workplace. However, practice in this unit is subject to regulations directly related to Occupational Health and Safety and where applicable contracts of training such as apprenticeships.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite Unit(s) **2**)

Competencies **2.1**)

There are no prerequisites units

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Employability Skills Information

Refer to the Evidence Guide

Elements and Performance Criteria Pre-Content

5) Elements describe the essential outcomes of a unit of competency.	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT		PERFORMANCE CRITERIA	
1	Plan and prepare work	1.1	Safety issues are identified to comply with enterprise/site and legislative requirements
		1.2	Work requirements are identified from relevant personnel and documentation
		1.3	Documentation to determine plant status is assessed and evaluate
		1.4	Localised plant inspection, pre-operational checks and field preparations for service are carried out in accordance with manufacturer and enterprise/site procedures
		1.5	Plant operational prerequisites are established in accordance with manufacturer and enterprise/site procedures
		1.6	Sequence for recommissioning of plant is determined to suit existing circumstances in accordance with enterprise/site requirements
		1.7	Where appropriate, the teams and individuals roles and responsibilities within the team are identified and, where required, assist in the provision of the on-the-job training

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ELEMENT		PERFORMANCE CRITERIA	
2	Operate plant	2.1	Plant is operated in accordance with enterprise and manufacturer operating procedures
		2.2	Plant is monitored and observed to detect deviations from normal operating conditions
		2.3	Corrective actions taken or reported, to rectify abnormalities, are in accordance with industry standards and site requirements
		2.4	Plant to be removed from service is locally identified and is removed from service in accordance with enterprise/site requirements
		2.5	Corrective actions are taken in accordance with enterprise safety rules and site requirements when abnormalities are identified during the removal from service
3	Test plant operation	3.1	Tests are performed in accordance with defined procedures applicable to the operational test
		3.2	Plant is observed for correct operational response
		3.3	Corrective action is taken when response is not in accordance with documentation, plant integrity or personnel safety requirements
		3.4	Plant is returned to required operational status upon completion of test
4	Analyse plant faults	4.1	Causes of abnormal plant operating conditions are identified by analysing the technical and operational information in a logical and sequential manner
		4.2	Corrective action taken is in accordance with enterprise/site procedures
		4.3	Plant integrity and personnel safety are maintained through consultation with appropriate personnel, and with reference to plant, technical and operational documentation

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ELEMENT		PERFORMANCE CRITERIA	
5	Monitor and inspect plant	5.1	Plant to be monitored/inspected is physically identified
		5.2	Plant is monitored/inspected for normal operation or to detect deviations
		5.3	Corrective action taken is in accordance with enterprise/site procedures
		5.4	Appropriate personnel are notified when defects are detected
6	Complete documentation	6.1	Documentation is updated and plant problems, movements, and abnormalities and status are reported and logged in accordance with enterprise/site procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

6) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of operating and monitoring boiler steam/water cycles for a permit to work.

The extent of the Essential Knowledge and Associated Skills required follows:

Evidence shall show that knowledge has been acquired for safe working practices of:

- Relevant Occupational Health and Safety regulations
- Relevant statutory legislation
- Relevant enterprise/site safety procedures
- Enterprise/site emergency procedures and techniques
- Relevant plant and equipment, its location and operating parameters
- Plant status
- Environmental legislation
- Enterprise recording procedures
- Communication principles
- Control and data acquisition systems

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REQUIRED SKILLS AND KNOWLEDGE

- Computers and software
- Supervisory, alarm, protection and control equipment
- Emergency procedures
- Basic motor performance
- Basic pump and compressor performance
- Valve, damper and actuator types and characteristics
- Principles of venting/draining steam or water under extremely high temperature and pressure
- Thermodynamics
- The process

Specific skills needed to achieve the Performance Criteria:

- Apply relevant Occupational Health and Safety regulations
- Apply relevant statutory legislation
- Apply relevant enterprise/site safety procedures
- Apply enterprise/site emergency procedures and techniques
- Apply enterprise recording procedures
- Identify plant status
- Prepare plant/equipment for operation
- Organise resources
- Operate boiler water/steam cycle
- Apply diagnostic and testing techniques
- Identify and respond to abnormal plant operating conditions
- Plan and prioritise work
- Use relevant hand tools; Communicate effectively
- Apply data analysis techniques and tools
- Use diagrams, drawings and symbols.

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Evidence Guide

EVIDENCE GUIDE

8) This provides essential advice for assessment of the unit of competency and must be read in conjunction with the Performance Criteria and the Range Statement of the unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this Competency Standard Unit and shall be used in conjunction with all components parts of this unit and, performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

8.**1**)

Longitude competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry and, Regulatory policy in this regard.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature so as to minimise error in judgment.

Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments.

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Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

8.2)

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the "Assessment Guidelines - UEP06". Evidence shall also comprise:

- A representative body of Performance Criteria demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:

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- Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and Range Statement
- Apply sustainable energy principles and practices as specified in the Performance Criteria and Range Statement
- Demonstrate an understanding of the essential knowledge and associated skills as described in 6) Essential Knowledge and Associated Skills of this unit
- Demonstrate an appropriate level of skills enabling employment
- Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
- Demonstrated performance across a representative range of contexts from the prescribed items below:
- Knowledge and application of relevant sections of: Occupational Health and Safety legislation; Statutory legislation; Enterprise/site safety procedures; Enterprise/site emergency procedures
- Preparation and planning of work
- Operation of boiler water/steam cycle
- Operationally testing plant
- Analysing plant faults
- Monitoring plant operation
- Dealing with an unplanned event by drawing on essential knowledge and skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items

Context of and specific resources for assessment

8.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

Competency Standards should be assessed in the workplace or simulated workplace and under the normal range of workplace conditions.

Assessment of this unit will be supported with documentary evidence, by means of endorsement stating type and application

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of work.

In addition to the resources listed above in Context of assessment', evidence should show competency working, in limited spaces, with different types of plant and equipment as well as different structural/construction types and methods and in a variety of environments.

Method of assessment

8.4)

This unit shall be assessed by methods given in Volume 1, Part 3 Assessment Guidelines.

Note:
Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

Concurrent assessment and relationship with other units

8.5)

There are no recommended concurrent assessments with this unit, however in some cases efficiencies may be gained in terms of learning and assessment effort being concurrently managed with allied competency standard units where listed.

Nil

Key competencies

8.6)

Evidence that particular key competencies have been achieved within this unit is in the context of the following Performance Criteria of evidence. See Volume 2, Part 4 for an explanation of Key competencies and levels of this Training Package.

Key competencies	**Example of Application**	**Performance Level**
How are ideas and information communicated within this competency?	Refer to the following example of application: Explain ideas and actions, make suggestions for alternative actions and deal with contingencies and non-routine situations.	2

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How can information be collected, analysed and organised?	Refer to the following example of application: Information with regard to operations, faults and maintenance may be observed and monitored for analysis and organised into records and reports.	2
How are activities planned and organised?	Refer to the following example of application: Planning the required activity, to include co-ordination and use of equipment, materials and tools to avoid backtracking and rework.	1
How is team work used within this competency?	Refer to the following example of application: Share tasks and provide appropriate support to other team members in completion of work tasks to meet the team's goals.	2
How are mathematical ideas and techniques used?	Refer to the following example of application: Calculation of time to complete tasks, estimation of distances, levels, loads and material requirements.	1
How are problem solving skills applied?	Refer to the following example of application: Determine solutions which focus on long and short-term resolution of work task problems.	2
How is use of technology applied?	Refer to the following example of application: Access, communicate, measure and record information with regard to operations and performance of plant and equipment.	1

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Skills Enabling Employment

8.**7**)

Evidence that competency in this unit incorporates skills enabling employment is in the context of the following performance. See Volume 2, Part 5 for definitions and an explanation of skills enabling employment.

Skills for Employment		**Example of Application**
1	Developing and using skills within a real workplace	Refer to the following example of application: Completion of tasks within an acceptable timeframe and performance with some supervision.
2	Learning to learn in the workplace	Refer to the following example of application: Comprehension and application of theoretical knowledge to well-developed skills.
3	Reflecting on the outcome and process of work task	Refer to the following example of application: Focused on improvement in own and other team member's performance in the workplace.
4	Interacting and understanding of the context of the work task	Refer to the following example of application: Working understanding of the processes and systems which apply to the workplace.
5	Planning and organising the meaningful work task	Refer to the following example of application: Achieving work tasks in a timely manner and ensuring that the work team achieves its stated work goals.
6	Performing the work task in non-routine or contingent situations	Refer to the following example of application: Seek advice and apply solutions to problems relevant to the workplace environment.

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Range Statement

RANGE STATEMENT

7) This relates to the unit of competency as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.

Systems, plant and/or equipment may include electrical supply switchboard(s) and transformers; electrical motors; valves and actuators (electric, hydraulic and pneumatic); supervisory, alarm, protection and control equipment; boiler circulation systems; boiler filling systems; boiler venting and draining systems; cooling water plant and equipment; filters; strainers; moisture removal devices; pressure control devices; safety devices; high and low pressure systems; and boiler water level indicators.

Safety standards may include relevant sections of Occupational Health and Safety legislation, enterprise safety rules, relevant state and federal legislation, national standards for plant and Australian standards.

Information and documentation sources may include verbal or written communications; enterprise safety rules documentation; equipment and alarm manuals; dedicated computer equipment; enterprise standing and operating instructions; and enterprise log books.

Technical and operational indicators may include stimuli (audio, smell, touch, visual), remote or local indicators and recorders and alarms (visible and or audible).

Communications may be by means of telephone, two way radio, pager, computer (electronic mail), operating log (written or verbal) and public address system.

Tests may include laboratory test for water quality and impurities, alarm testing, leak test and safety valve float.

Appropriate personnel to consult, give or receive direction may include, supervisor/team leader or equivalent, power plant operations personnel or equivalent, technical and engineering officers or equivalent, maintenance staff and contractor personnel.

Test, fault finding and operating tools may include power or hand tools.

Operating environment may be during inclement or otherwise harsh weather conditions, in wet/noisy/dusty/hot areas and during continuous operation.

Faults and abnormal operating conditions may include motor/pump/ actuator/valve failure/malfunctions, control equipment failure/malfunctions, loss of electrical supply to plant and equipment, excessive vibration pumps/motors, loss/low cooling water pressure, boiler tube leaks, low/high steam pressure/temperature, plant equipment failure and loss of control air supply.

Generic terms are used throughout this Training Package for vocational standard shall

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RANGE STATEMENT

be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms are given in Volume 2, Part 1.

Unit Sector(s)

Not Applicable

Literacy and numeracy skills

Literacy and numeracy skills

2.2)

Participants are best equipped to achieve this unit if they have reading, writing and maths skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 Literacy and Numeracy

Reading	3	Writing	3	Maths	3

Competency Field

Competency Field

4)

Operations.

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PMLORG301A Plan and conduct laboratory/field work

Modification History

Unit Descriptor

This unit of competency covers the ability to plan and complete tasks individually or in a team context. The tasks involve established routines and procedures using allocated resources with access to readily available guidelines and advice. Work plans may need to be modified with supervisor agreement to suit changing conditions and priorities.
This unit of competency is based on, and equivalent to, the units PMLORG300A Follow established work plan and PMLTEAM300A Work efficiently as part of a team in PML99.
This unit of competency has no prerequisites.
This unit of competency is applicable to laboratory or technical assistants/officers and instrument operators working in all industry sectors covered by this Training Package.
Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section This competency in practice.

Application of the Unit

Licensing/Regulatory Information

Pre-Requisites

Employability Skills Information

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.
Performance Criteria describe the level of performance required to demonstrate achievement of the element.

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Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Plan and organise daily work activities	1.1 Clarify allocated work activities and required resources if necessary
	1.2 Prioritise work activities as directed
	1.3 Break down work activities into small achievable components and efficient sequences
	1.4 Review work plan in response to new information, urgent requests, changed situations or instructions from appropriate personnel
	1.5 Update work plan and communicate changes to appropriate personnel
2 Complete allocated work	2.1 Locate relevant workplace procedures for required tasks
	2.2 Undertake task(s) following prescribed and routine work related sequences
	2.3 Seek assistance from relevant personnel when difficulties cannot be handled
	2.4 Record completion of activities to confirm outputs in accordance with plan
3 Identify and resolve work problems	3.1 Recognise problems or opportunities for improved work performance
	3.2 Apply agreed problem solving strategies to consider possible causes and solutions
	3.3 Identify and access appropriate sources of help
	3.4 Consider available alternatives and keep them open before agreeing on the most appropriate action.
4 Work in a team environment	4.1 Cooperate with team members to negotiate and achieve agreed outcomes, timelines and priorities
	4.2 Recognise personal abilities and limitations when undertaking team tasks

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		4.3	Confirm personal role and responsibility within the team for particular outputs
		4.4	Demonstrate sensitivity to the diversity of other team members' backgrounds and beliefs
5	Update knowledge and skills as required	5.1	Recognise own strengths and weaknesses and take advantage of skill development opportunities.

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Required Skills and Knowledge

Evidence Guide

The Evidence Guide describes the underpinning knowledge and skills that must be demonstrated to prove competence.

Critical aspects of competency

Competency must be demonstrated in the ability to perform consistently at the required standard. In particular, assessors should look to see that the candidate:

conducts work based on ethical values and principles

clarifies tasks and recognises resource needs

follows relevant procedures

recognises potential disruptions or changed circumstances and modifies work plan in conjunction with relevant personnel

compensates for a variety of working environments (indoor, outdoor and night)

seeks assistance from relevant personnel when difficulties arise

achieves quality outcomes within timelines

works effectively with team members who may have diverse work styles, cultures and perspectives

promotes cooperation and good relations in the team.

Underpinning knowledge

Competency includes the ability to apply and explain:

enterprise procedures covering:

customer service

quality

OHS and environmental legislative requirements

technical work that the candidate routinely performs

workplace agreements and employment conditions, such as:

workers compensation

industrial awards enterprise agreements

equal employment opportunity

anti discrimination and anti-harassment

ethical background relevant to the nature of the work, such as:

use of animals for research

genetic modification, gene therapy, cloning, stem cells

in vitro fertilisation

forensic testing of populations

importance of commercial confidentiality

problem solving strategies

interpersonal communication and conflict resolution techniques

relevant health, safety and environment requirements.

Assessment context and methods

This unit of competency is to be assessed in the workplace or simulated workplace environment.

The following assessment methods are suggested:

review of a flowchart prepared by the candidate to show efficient sequencing of tasks

observation of the candidate performing a range of technical tasks over sufficient time to demonstrate their handling of a variety of contingencies

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review of documents detailing completed tasks, such as completed job cards, a report or suggestions for quality improvement
feedback from peers and team members
feedback from supervisors
written or oral questions to partly assess the candidate's ability to handle a range of contingencies and working in a team environment.
In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Questioning techniques should suit the language and literacy levels of the candidate.

Interdependent assessment of unit

This unit of competency may be assessed with:

PMLOHS302A Participate in laboratory/field workplace safety

PMLCOM300B Communicate with other people

technical units related to the tasks undertaken.

Resource implications

Resources may include:
enterprise procedures, equipment and materials for relevant technical tasks.

This competency in practice

Manufacturing

A plastic processing plant had to halt production because of a suspect raw material. The plant manager immediately requested the polymer testing laboratory to test and identify all batches of polypropylene additives and colouring agents. The laboratory team of three assistants and one technical officer allocated the workload amongst themselves to conduct the twelve different tests within a period of four hours to identify the 'out of specification' materials and report them to the production supervisor. All laboratory assistants had to reschedule their workplan, perform the required tests and assist each other to solve the production problem.

Biomedical

As part of a routine sequence, a technical officer is required to perform a series of tasks, including the calibration of instruments required for testing of blood samples. These tasks are to be completed within a specified timeframe to meet the output requirements of the enterprise. During the calibration of one of the instruments, the technician experiences difficulties that required expert technical assistance. The problem is referred to the appropriate person and is quickly resolved. Consequently, the officer is able to complete all necessary tasks within the prescribed timeframe and the required output is maintained.

Food processing

Each of the technical assistants working in the laboratory of a food processing company was dedicated to performing specific analyses. As a result, they often alternated between periods of inactivity and excessive workload (the latter case had the potential to compromise their health and safety and the accuracy of their food analyses). One of the contributing factors to the periods of intense activity was the need to quickly prepare standard solutions and reagents. The team discussed this problem and agreed that while it was not appropriate for each assistant to become competent to perform every analytical procedure, it was feasible for each person to be able to prepare solutions and reagents used by others. The team developed a central register in which impending shortages of these materials was noted. Each assistant referred to this register when no other work was due and prepared the materials on a 'first in, first out' basis unless a task was given a priority rating. The team found that this strategy more evenly distributed the workload over their shift, improved safety in the laboratory and reduced the risk of error.

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Key Competencies

The seven key competencies represent generic skills considered for effective work participation. The bracketed numbering against each of the key competencies indicates the performance level required in this unit. These are stand-alone levels and do not correspond to levels in the Australian Qualifications Framework (AQF).

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

Collecting, analysing and organising information	Communicating ideas and information	Planning and organising activities	Working with others and in teams	Using mathematical ideas and techniques	Solving problems	Using technology
Level 1	Level 1	Level 2	Level 2	Level 1	Level 1	Level 1

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Range Statement

The range of variables relates to the unit of competency as a whole. It allows for different work environments and situations that will affect performance.
Where reference is made to industry Codes of Practice, and/or Australian/international standards, it is expected the latest version will be used.
All work is performed ethically and professionally and includes:
following enterprise policy and procedures, regulations and legislation
behaving honestly and openly
respecting others and treating them with courtesy and impartiality
working diligently and responsibly
ensuring confidentiality of information, including client identification and test results
ensuring proprietary rights, intellectual property and copyright are protected
clarifying personal values and ethics and analysing how they impinge on actions in the workplace.
Workplace activities may include but are not limited to performing:
set up and pre-use checks of laboratory equipment
calibration status checks
sampling and testing following standard procedures
maintenance and cleaning tasks.
Workplace procedures may include:
standard operating procedures SOPs
job cards, batch cards, production schedules
job descriptions
methods, recipes, procedures and protocols.
Problem solving may include:
accessing relevant documentation
identifying inputs and outputs
sequencing a process
identifying and rectifying a problem step
obtaining timely help
implementing preventative strategies wherever possible.
Each team member assists the rest of the team to organise and manage its workload. The team may:
be ongoing with responsibility for particular services or functions, or project based
have a mixture of full and part-time employees and contractors, laboratory, construction and production personnel
be separated by distance and work at sites outside laboratory facilities.
The team operate within:
small, medium and large contexts
internal and external environments
enterprise guidelines covering access and equity principles and practices, licensing requirements, industrial awards, enterprise bargaining agreements, Codes of Practice
agreed responsibility and accountability requirements
appropriate goals, objectives
given resource parameters.
The work tasks of individual team members will vary according to the size of enterprise, the scope of the laboratory and their level of responsibility.

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The team may use a variety of strategies to maintain work flow:
communicating critical events on shift
recognising shortages in reagents and problems with equipment
communicating quality breakdowns
recognising urgent and abnormal results to be processed
communicating and behaving in a courteous manner
being punctual.

Health, safety and environment

All operations to which this unit applies are subject to stringent health, safety and environmental (HSE) requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

All operations assume the potentially hazardous nature of samples and require standard precautions to be applied. Users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council and State and Territory Departments of Health. All operations are performed in accordance with standard operating procedures.

Unit Sector(s)

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PMLOHS301B Work safely with instruments that emit ionising radiation

Modification History

Unit Descriptor

This unit of competency covers the ability to safely store, transport and operate instruments that emit ionising radiation following established safe work practices and in accordance with licensing requirements. Examples include use of process control instrumentation, such as fluid level gauges using radioactive sources, on-site non-destructive testing of weldments using X-ray and gamma ray sources and density testing of asphaltic concrete.
This unit of competency has no prerequisites.
This unit of competency is applicable to laboratory or field operators working under supervision or direction of para-professionals, commonly in a construction materials testing or similar environment.
Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section This competency in practice.

Application of the Unit

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Employability Skills Information

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.
Performance Criteria describe the level of performance required to demonstrate achievement of the element.

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Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Store instruments safely and securely	1.1 Identify State or Territory requirements for storage facilities and associated document processes
	1.2 Store instruments in accordance with State or Territory requirements and documented procedures
	1.3 Secure instruments to prevent unauthorised access
	1.4 Record instruments' movements and usage in accordance with documented procedures
2 Transport instruments safely and securely	2.1 Select vehicle suitable for the purpose
	2.2 Attach regulation signage in accordance with State or Territory requirements to indicate that radioactive sources are being carried
	2.3 Ensure that instruments are properly located and fixed in place
	2.4 Ensure security of instruments when the vehicle is unattended
3 Use instruments safely and maintain security	3.1 Follow safe working practices to minimise own exposure to radiation
	3.2 Use radiation dosimeter to monitor own exposure to radiation
	3.3 Follow safe work practices to minimise exposure of others to radiation
	3.4 Follow safe work practices to protect the instrument from damage
	3.5 Maintain instrument security
4 Monitor radiation levels	4.1 Check operation and calibration status of radiation survey meter
	4.2 Perform radiation survey following documented procedure
	4.3 Report atypical conditions and/or problems to

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			appropriate personnel
5	Maintain records	5.1	Record observations, data and results in accordance with enterprise procedures
		5.2	Maintain confidentiality of enterprise information
6	Perform emergency procedures	6.1	Identify potential emergency situations
		6.2	Respond to emergencies in accordance with documented procedures
		6.3	Report emergency situations to appropriate personnel.

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Required Skills and Knowledge

Evidence Guide

The Evidence Guide describes the underpinning knowledge and skills that must be demonstrated to prove competence.

Critical aspects of competency

Competency must be demonstrated in the ability to perform consistently at the required standard. In particular, assessors should look to see that the candidate:

keeps other personnel clear of radiation sources
demonstrates emergency procedures
performs and documents radiation surveys
places the instrument into storage
safely transports the instrument in a motor vehicle
safely handles and uses the instrument
observes, interprets and reports atypical situations
communicates problems to appropriate personnel promptly.

Underpinning knowledge

Competency includes the ability to apply and explain:

health, safety and emergency procedures relevant to radioactive devices
factors affecting radiation intensity
principles of external radiation protection and practical methods of minimising radiation exposure
methods of measuring and detecting ionising radiation
nature of radiation, different types of radiation, their characteristics, sources and shielding methods
physiological effects of ionising radiation
State or Territory licensing requirements
national Codes of Practice
general guidelines for safe handling of radiation sources.

Assessment context and methods

This unit of competency is to be assessed in the workplace or simulated workplace environment.

The following assessment methods are suggested:

analysis of work completed by the candidate over a period of time to ensure accuracy, consistency and timeliness
observation of candidate using the instruments in a range of work contexts
review of enterprise documentation completed by the candidate
feedback from peers and supervisors
use of suitable simulation and/or a range of case studies/scenarios.

In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Questioning techniques should suit the language and literacy levels of the candidate.

Interdependent assessment of unit

This unit of competency may be assessed with:

PMLOHS302A Participate in laboratory/field workplace safety
PMLTEST411A Perform mechanical tests
PMLDATA400A Process and interpret data.

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Resource implications

Resources may include:

appropriate tools, instruments, equipment and materials

enterprise procedures, test methods, equipment manuals.

This competency in practice

Construction materials

Soil moisture density gauges are used extensively for measuring the density of soils, cement treated roadbase, roller compacted concrete and asphalt. They provide a non-destructive means of monitoring compaction operations during construction, so that additional rolling can be provided before the material sets or is covered with another layer. National and State Codes of Practice regulate the use of equipment that emits ionising radiation. States and Territories also have licensing and registration requirements for people involved in owning, storing, transporting or using such equipment.

Soil moisture density gauges are used on construction sites, so they are transported to the test site in motor vehicles. They must be protected from damage and stored safely and securely while not in use. The operator must ensure that bystanders are kept clear to minimise radiation exposure. Owners of gauges are required to have documented procedures and ensure that operators are adequately trained. To ensure the safety and integrity of the gauge, radiation surveys are required at regular intervals. A handheld radiation meter is used, and the results recorded.

Key Competencies

The seven key competencies represent generic skills considered for effective work participation. The bracketed numbering against each of the key competencies indicates the performance level required in this unit. These are stand-alone levels and do not correspond to levels in the Australian Qualifications Framework (AQF).

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

Collecting, analysing and organising information	Communicating ideas and information	Planning and organising activities	Working with others and in teams	Using mathematical ideas and techniques	Solving problems	Using technology
Level 1	Level 1	Level 1	Level 1	Level 1	Level 2	Level 2

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Range Statement

The range of variables relates to the unit of competency as a whole. It allows for different work environments and situations that will affect performance.
Where reference is made to industry Codes of Practice, and/or Australian/international standards, it is expected the latest version will be used.
Operations are performed in accordance with laboratory and/or enterprise procedures, and appropriate legislative requirements. These procedures and requirements include or have been prepared from:
Australian and international standards, such as:
AS2243 Safety in laboratories, Part 4 Ionising radiation and Part 5 Non-ionising radiation
Codes of Practice prepared by
Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)
National Health and Medical Research Council (NHMRC)
State and territory legislation dealing with health and environmental protection
standard operating procedures (SOPs)
equipment manuals
equipment start-up, operation and shutdown procedures
calibration and maintenance schedules
quality manuals
enterprise recording and reporting procedures
production and laboratory schedules
material, production and product specifications
licensing requirements.
Instruments and equipment used may include:
soil moisture/density gauges
borehole logging probes
fluid density/level detectors
battery chargers
radiation monitors/doimeters
motor vehicles
storage areas for nuclear sources
documentation, including user manuals, enterprise safety manuals
radiation warning signs.
Typical skills may include:
performing radiation surveys using radiation monitors
using radiation dosimeters
transporting instruments containing radioactive materials
storing instruments containing radioactive materials
using instruments containing radioactive materials
maintaining instruments containing radioactive materials.
Hazards and problems may include:
jamming of the source rod in the exposed position
incidents during transportation
fire
theft of equipment containing radioactive sources
on-site accidents
keeping other personnel clear of instrument

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instrument breakdown.
Safe working practices include the critical elements for radiation safety
time (reduce the exposure time)
distance (maintain greatest distance possible at all times)
shielding (interpose as much radiation shielding between yourself and the radiation source as possible).

Health, safety and environment

All operations to which this unit applies are subject to stringent health, safety and environmental (HSE) requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

All operations assume the potentially hazardous nature of samples and require standard precautions to be applied. Users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council and State and Territory Departments of Health. All operations are performed in accordance with standard operating procedures.

Unit Sector(s)

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MSAPMPER200B Work in accordance with an issued permit

Modification History

Not applicable.

Unit Descriptor

This unit aims to ensure that people working under a permit to work understand the system, know the limitations of the permit under which they are working and comply with all the requirements of the permit. The people to whom this unit applies may be called ‘permit recipients’ or ‘permit holders’ by some organisations. Some organisations call ‘permits’ ‘clearances’

This unit covers the basic competency of working under a permit. Where entry to a confined space is required, then *MSAPMPER205B Enter confined space* is also required. The safety observer (standby person) competencies are covered by *MSAPMPER202A Observe permit work.* The issuing of permits is covered by *MSAPMPER300B Issue work permits.*

Application of the Unit

This competency applies to persons who are required to conduct work activities under the authority of an issued permit to work and within the context and requirements of that permit. This typically applies to all work done by maintenance staff and contractors, and also to any other non-process work performed on the plant. It includes:

- identifying the range and scope of work covered by the permit
- checking that the right type of permit has been issued for the type of work
- adequately preparing to undertake the work, including obtaining all necessary safety equipment and PPE
- undertaking the work strictly in accordance with the provisions of the permit
- maintaining correct housekeeping with permit activities
- completing work in accordance with the permit requirements
- querying or raising matters about the permit if the scope of work/nature of the tools to be used varies from that covered by the permit
- handing back the permit in accordance with procedures and obtaining appropriate sign off as required.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not applicable.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply for permit(s)	1.1. Confirm the scope and location of the work to be done 1.2. Identify the need for a work permit(s) for the work to be carried out. 1.3. Identify the type of work permit required. 1.4. Collate information required for the issue of the permit 1.5. Apply for the permit following the organisations requirements
2. Identify the scope of the permit.	2.1. Check that work to be done complies with the permit type. 2.2. Check that the scope and location of work comply with the permit issued 2.3. Check that the hazard controls specified on the permit are consistent with the hazard analysis 2.4. Check that preparations specified on the permit have been completed 2.5. Sign onto/receive the permit.
3. Prepare for permitted work.	3.1. Maintain safe working conditions and environment by using available isolation procedures, safety equipment and emergency procedures. 3.2. Monitor plant conditions and hazards to ensure work under the permit remains safe. 3.3. Ensure that appropriate safety equipment and clothing are selected and worn as required by the permit and relevant procedures. 3.4. Inspect work area to ensure safety and compliance with permit requirements and procedures.
4. Work in accordance with an issued permit.	4.1. Use required hazard reduction/control measures. 4.2. Comply with requirements of the permit including safety observer if required. 4.3. Ensure compliance with scope, location and timeframe specified in the permit or seek re-authorisation as required 4.4. Suspend job and make work site safe before leaving job. 4.5. Formally seek and receive authorised extensions to the permit when required. 4.6. Give end of day status report to permit issuer.
5. Complete permit(s) to work.	5.1. Obtain new permit(s) or have existing permit(s) revalidated before work is recommenced. 5.2. Check the work conducted against the issued permit(s) to ensure that all the nominated work requirements have been satisfied. 5.3. Monitor general housekeeping to ensure that the site has been

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	left in a clean and safe condition. 5.4. Ensure personal lockouts/tag outs/isolations are removed in accordance with procedures 5.5. Communicate status of the work conducted and the results of the permit to relevant personnel. 5.6. Complete documentation as required and have permit signed off when job is completed.

Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.
Required skills:
Competence includes the ability to: • access and interpret information relevant to specific tasks (eg labels, MSDSs hazchem signs) • identify changes to conditions which may lead to the permit being revoked before the job is completed • describe and/or explain hazards associated with tasks covered by the permit, types of tests required for the issue of work permits – the types of tests to include, atmospheric/oxygen/breathability, flammability/explosivity, toxicity/TWA, temperature, humidity • the impact of the regulatory framework and organisation procedures under which the permit operates upon the particular job(s) requiring the permit. Language, literacy and numeracy requirements • This unit may require the ability to read and correctly interpret complex P&ID's; speak clearly and unambiguously in English; and to explain, describe and verify sometimes complex needs and issues. • Writing is required to the level of completing workplace forms. • Numeracy is required to the level of being able to correctly differentiate between high and low pressures and temperatures, voltages or masses.
Required knowledge:
Knowledge and understanding of the relevant OHS and environmental requirements, in particular those relating to various situations requiring work permits, with an ability to implement the requirements in a manner that is relevant to the job. Knowledge of the organisation's standard procedures and work instructions and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and in a manner relevant to the job.

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Sufficient knowledge of all types of permits is required to ensure work is not carried out without the correct permit. This includes recognizing hot work and confined spaces.

Knowledge of regulatory frameworks should include:

- licence requirements for the job,
- company policy and procedures
- permit control systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should demonstrate competence on actual plant and equipment in a work environment The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Simulation may be required to allow for assessment of parts of this unit. Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to distinguish between situations requiring the major types of permit and to list the major requirements of each type of permit. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to: • provide reasons for a permit system • recognise the importance of different work permits • comply with permit conditions including the wearing of appropriate personal protective equipment (PPE) • take appropriate action to resolve faults or report faults to appropriate personnel • explain and implement incident response procedures. Consistent performance should be demonstrated, e.g. look to see that: • communications are timely and effective • deviations from permit conditions are recognised, reported, corrected and re-authorization arranged • actions specified in the permit/standard procedures are carried out • all safety procedures are followed.
Context of and specific resources for assessment	A holistic approach should be taken to the assessment. Assessment will occur over a range of situations which may include disruptions to normal, smooth operation.

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	Competence in this unit may be assessed: • on a plant/in the work place/a work situation • by using a suitable simulation based on the actual plant and including walk throughs of the relevant competency components and/or a range of case studies/scenarios and role plays • by questioning and using 'what if' scenarios both on the plant (during demonstration of normal operations and walk throughs of abnormal operations) and off the plant • through a combination of these techniques. These aspects may be best assessed using a range of simulations/scenarios/case studies and 'what ifs' as the stimulus with a walk through forming part of the response. These assessment activities should cover a range of problems, including new or unusual situations which may have been generated from the past incident history of the plant, incidents on similar plants around the world, hazard analysis activities and similar sources. In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment. Assessors need to be aware of any cultural issues that may affect responses to questions. Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed. In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. While oral assessments may be appropriate there needs to be a written record for audit purposes. This section should be read in conjunction with the Range Statement for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions which will be used to probe the reasoning behind the observable actions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.
Method of assessment	Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources

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	should include equipment modified for people with disabilities.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This unit typically applies to all work done by maintenance staff and contractors, and also to any other non-process work performed on the plant. All work is to be conducted using the appropriate personal protective equipment. The types of work permits may include: • cold work/general permit to work • excavation • hot work • vehicle entry • minor repairs • working at heights • other special permits. Note that entry to a **confined space** is covered by *PMPPER205B Enter confined space.* The Australian Standard (*AS2865*) definition given for confined space entry is used in this Training Package. All operations are performed in accordance with standard operating procedures (SOPs). Checks to ensure a workplace is safe may include: • process isolations complete • mechanical and electrical isolations in place • atmospheric testing complete and atmosphere safe. If it is not safe and cannot be made safe, then appropriate measures are implemented as per SOPs. • relevant personnel informed of work and agree that it is safe and appropriate to proceed.
Procedures	All operations are performed in accordance with procedures. Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards. These may include:

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	• legislation/codes • OHS legislation, codes of practice and guidance material • EPA • National and Australian standards • licence and certification requirements • internal permit control system. • process isolations complete • mechanical and electrical isolations in place • atmospheric testing complete and atmosphere safe. If it is not safe and cannot be made safe, then appropriate measures are implemented as per SOPs. • relevant personnel informed of work and agree that it is safe and appropriate to proceed.
Information required for permit	Information required for a permit includes: • work description • tools to be used • process/methods of work/SOPs • MSDSs • JHA/JSA/SWMSs
Tools and equipment	This competency includes use of safety equipment and tools such as: • eye protection (eg goggles) • ear protection • gloves • clothing • respirators and masks • helmets • safety footwear.
Hazards	Typical hazards include: • heat, smoke, dust or other atmospheric hazards • sharp edges, protrusions or obstructions • limited head spaces or overhangs • equipment or product mass • slippery surfaces, spills or leaks • noise, rotational equipment or vibration.

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Problems	‘Respond to routine problems' means 'apply known solutions to a limited range of predictable problems'. Typical problems may include: • provision of the wrong permit • incorrect information being supplied with the permit • errors being made in the understanding of permit data • failure to correctly correspond to the requirements of the permit • failure to seek clarification when anomalies occur.
Variables	Key variables to be monitored include: • sites under which permit activities must be applied • type of permit to be executed • types of tools and equipment to be employed • size of work team • scope and urgency of work.
Health, safety and environment (HSE)	*All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any* time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

HSE

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FPIFGM3204A Fall trees manually (intermediate)

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit specifies the outcomes required to assess, plan and safely carry out intermediate manual tree falling operations. This unit is intended for use in situations where the production of timber is not the primary focus of the activity. Compliance with licensing, legislative, regulatory or certification requirements may be required in various jurisdictions

This unit replaces FPIFGM111A Fall trees manually - intermediate (non-commercial/non-production)

Application of the Unit

Application of the Unit

This unit supports the attainment of skills and knowledge required for competent workplace performance in forest and forest products operations of all sizes. The unit applies to a forest environment and involves application of skills and knowledge at a tradesperson level. These skills and knowledge are to be used within the scope of the person's job and authority

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Not Applicable

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the Required Skills and Knowledge and/or the Range Statement. Assessment of performance is to be consistent with the Evidence Guide

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Prepare and maintain falling equipment	1.1 Applicable ***Occupational Health and Safety*** (***OHS***), ***legislative*** and ***organisational*** requirements relevant to ***falling trees*** are identified and complied with
	1.2 Site ***environmental protection measures*** are adhered to in accordance with relevant legislation and regulations
	1.3 ***Work plan*** is reviewed and checked as required with ***appropriate personnel***
	1.4 ***Tools and equipment*** are selected appropriate to work requirements and checked for operational effectiveness in accordance with manufacturer's recommendations
	1.5 Blunt or damaged chainsaw is detected, rectified and reported in accordance with workplace procedures
	1.6 Operational effectiveness of chainsaw is monitored to ***maintain*** falling safety and productivity
	1.7 ***Communication*** with others is established and maintained in accordance with OHS requirements
2 Assess conditions and surroundings	2.1 Site environmental concerns are identified and complied with in accordance with relevant national, state, and local legislation and/or regulations
	2.2 ***Environmental conditions*** are identified and assessed in accordance with work order requirements
	2.3 Awareness of environmental conditions and other personnel activity in the work area is maintained and falling activity modified
	2.4 General factors affecting falling requirements are determined and specific forest or site risks and hazards are assessed and controlled
3 Assess tree and plan falling	3.1 Tree falling sequence for individual trees is assessed and progressively planned
	3.2 Tree to be felled is located and growth is cleared to enable a ***visual assessment*** of falling characteristics
	3.3 Required falling direction is assessed and checked in accordance with planned falling
	3.4 Sequence of cuts to fall tree is planned in accordance with standard falling procedures
	3.5 Suitable escape route is selected and cleared of growth and other obstacles in accordance with environmental care principles and statutory requirements
	3.6 Personal ***limitations*** in safely falling trees with own

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ELEMENT	PERFORMANCE CRITERIA
	skills are assessed and ***assistance*** sought from appropriate personnel
	3.7 Location and activity of other personnel in the work area is noted and monitored
4 Fall tree	4.1 All work is conducted using established safe operating practices and in accordance with workplace procedures
	4.2 Tree falling operations are safely undertaken appropriate to site conditions and at a safe distance from other personnel in the work area
	4.3 Unexpected characteristics of tree and other problems are identified, assistance sought and planning reviewed
	4.4 Planned escape route is used when tree starts to fall and the fall and movement of tree on ground is monitored until stability is determined
	4.5 Chainsaw is monitored for operational effectiveness and any faults, malfunctions or problems are reported in accordance with workplace procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, **required for this unit**

Required skills include:

- comply with legislation, regulations, standards, codes of practice and established safe practices and procedures relating to intermediate manual tree falling operations
- use and maintain relevant tools, machinery and equipment
- identify problems and equipment faults and demonstrate appropriate response procedures
- use appropriate communication and interpersonal techniques and methods with colleagues and others
- accurately record and report workplace information, and maintain documentation
- use hand signals with other operators to maintain effective and safe tree falling
- recognise own limitations in assessing conditions and

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trees for falling

- contribute to a tree assessment and plan and fall trees within the range of variables for trees and conditions
- recognise common diseases, pests and nutrition deficiencies
- calculate slopes and weights in the metric system

Required knowledge and understanding includes:

- applicable Commonwealth, State or Territory licensing, legislative, regulatory or certification requirements and codes of practice relevant to intermediate manual tree falling operations
- organisational and site standards, requirements, policies and procedures relating to intermediate manual tree falling operations
- principles of cultural diversity and access and equity
- environmental protection requirements, including the safe disposal of waste material
- established communication channels and protocols
- problem identification and resolution
- types of tools and equipment and procedures for their safe use, operation and maintenance
- identification and evaluation of structural defects in trees
- types and purposes of a range of cuts to fall trees
- hazards of operating a chainsaw and falling trees
- operational principles and limitations of a chainsaw
- procedures for recording, reporting and maintaining workplace records and information
- appropriate mathematical procedures for estimation and measurement

KEY COMPETENCIES

The seven key competencies represent generic skills considered necessary for effective participation by an individual in the workplace
Performance Level 1 - at this level, the candidate is required to undertake tasks effectively
Performance Level 2 - at this level, the candidate is required to manage tasks
Performance Level 3 - at this level, the candidate is required to use concepts for evaluating and reshaping tasks

Key Competency	Example of Application	Performance Level
How are ideas and information communicated?	By communicating in simple language to confirm work requirements, convey	2

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	information to colleagues, and report outcomes relating to falling trees	
How can information be collected, analysed and organised?	By collecting, organising and understanding information required to plan and undertake tree falling	2
How are activities planned and organised?	By organising and conducting tree falling activities in the correct sequence to complete within the designated timeframes	2
How is team work used?	By using effective communication and interpersonal techniques with colleagues and others to maximise confidence, satisfaction and productivity during tree falling operations	1
How are mathematical ideas and techniques used?	By calculating slopes, wind speed and direction time to complete tasks	3
How are problem solving skills applied?	By establishing safe and effective tree falling procedures and processes which anticipate likely problems to avoid wastage and downtime	2
How is the use of technology applied?	By selecting and using equipment to fall trees	1

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, **Required Skills and Knowledge**, **the Range Statement and the Assessment Guidelines for this Training Package**

Overview of assessment

- A person who demonstrates competency in this unit must be able to provide evidence that they can safely and efficiently assess, plan and conduct tree falling operations in accordance with environmental and organisational requirements

Critical aspects for assessment and evidence required to demonstrate

- Comply with applicable Commonwealth, State or Territory legislative and regulatory requirements and codes of practice, including OHS, environmental and organisational

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EVIDENCE GUIDE

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competency in this unit	policies and procedures, relevant to falling trees manually (intermediate) • Comply with applicable licensing or certification requirements • Communicate effectively and work safely with others including maintaining an awareness of other personnel activity in the work area • Contribute to a tree assessment, plan and fall trees within the range of variables for trees and conditions • Visually assess trees and determine falling characteristics • Select, use and maintain appropriate tools and equipment and recognise faults, problems or malfunctions • Safely operate and maintain a chainsaw

Context of and specific resources for assessment	• Competency is to be assessed in the workplace or realistically simulated workplace
	• Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
	• Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
	• Assessment is to comply with relevant regulatory or Australian Standards requirements
	• The following resources should be made available:
	  • workplace location or simulated workplace
	  • materials and equipment relevant to manual falling of trees (intermediate)
	  • specifications and work instructions

Method of assessment	• Assessment must satisfy the endorsed Assessment Guidelines of the FPI05 Training Package • Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge • Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies • Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge

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EVIDENCE GUIDE

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- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency
- The assessment environment should not disadvantage the candidate
- Assessment practices should take into account any relevant language or cultural issues related to Aboriginality, gender or language backgrounds other than English
- Where the participant has a disability, reasonable adjustment may be applied during assessment
- Language and literacy demands of the assessment task should not be higher than those of the work role

Range Statement

RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording in the Performance Criteria is detailed below

OHS requirements are to be in accordance with Commonwealth, State or Territory legislation and regulations, and organisational safety policies and procedures. Requirements may include:

- the use of personal protective equipment and clothing
- safety equipment
- first aid equipment
- fire fighting equipment
- hazard and risk control
- elimination of hazardous materials and substances
- safe forest practices including required actions relating to forest fire
- manual handling including shifting, lifting and carrying

Legislative requirements are to be in accordance

- award and enterprise agreements
- industrial relations

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RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording in the Performance Criteria is detailed below

with applicable legislation from all levels of government that affect organisational operation. **Requirements may include**:	• Australian Standards • confidentiality and privacy • OHS • the environment • equal opportunity • anti-discrimination • relevant industry codes of practice • duty of care • heritage and traditional land owner issues
Organisational requirements	• may include legal, organisational and site guidelines, policies and procedures relating to own role and responsibility, quality assurance, procedural manuals, quality and continuous improvement processes and standards, OHS, emergency and evacuation, ethical standards, recording and reporting, access and equity principles and practices, equipment use, maintenance and storage, environmental management (waste disposal, recycling and re-use guidelines)
Falling	• may require the use of multiple back-cuts
Trees	• for falling will have the following characteristics: height not more than 40 metres, lean and weight distribution which can be adapted to falling direction with the use of wedges and or control with hinge wood, single leader, sound wood condition in barrel
Environmental protection measures	• may include noise, ground growth, canopy, general forest lean, wind speed and direction, fallen trees, density of trees, ground slope, soil and water protection, ground hazards, obstacles. Measures may also include contingencies for modifying operations during wet or other adverse weather conditions
Work plan	• is to include information and instructions relevant to tree falling operations including processing location details and trees to be felled and retained. Information may also include general environmental requirements, site plan and environmental features
Appropriate personnel	• may include supervisors, clients, colleagues, line management
Tools and equipment	• may include warning signs, chainsaw and components, personal protective equipment and

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RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording in the Performance Criteria is detailed below

	clothing, first aid equipment, maintenance requirements, fuel
Maintenance	• of chainsaw and components may include sharpening and making adjustments as required
Communication	• may include verbal and non-verbal language, constructive feedback, active listening, questioning to clarify and confirm understanding, use of positive, confident and cooperative language, use of language and concepts appropriate to individual social and cultural differences, control of tone of voice and body language, hand signals
Environmental conditions	• may relate to ground growth, canopy, general forest lean, ground slope, ground hazards, wind speed and direction, wet weather including ice and snow
Conditions	• in which falling will be undertaken include ground slope not more than 15 degrees, moderate wind speed, absence in growth of fallen trees preventing complete fall, works with general supervision available to provide assistance related to planning, falling
Limitations	• may relate to job role and responsibilities, own competency level, industry requirements, own understanding of risk identification processes, own interpretation of legislation, regulations and procedures, complying with OHS requirements
Assistance	• may be required in situations where cuts made may lead to loss of control of tree in falling, to confirm and adjust cutting techniques in response to movement and condition of tree, to help clear trees that hang up during falling
Visual assessment	• may cover size, weight distribution, lean, species, multi leaders, soundness of timber, growth characteristics and stresses

Unit Sector(s)

Not Applicable

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Competency Field

Competency Field Forest Growing and Management

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FPICOT2221B Trim and cross cut felled trees

Modification History

Not Applicable

Unit Descriptor

Not Applicable

Application of the Unit

Not Applicable

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

Not Applicable

Elements and Performance Criteria Pre-Content

Not Applicable

Elements and Performance Criteria

Not Applicable

Required Skills and Knowledge

Not Applicable

Evidence Guide

Not Applicable

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Range Statement

Not Applicable

Unit Sector(s)

Not Applicable

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CPCCCM2007A Use explosive power tools

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply safe and effective operation of explosive power tools (EPT), used to fasten materials or fix fasteners to bases. It includes both direct action and indirect action explosive powered fastening tools.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to safely and effectively use a range of EPT used in the construction industry.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans and specifications.
	1.6. ***Materials*** appropriate to work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out fasteners.	2.1. ***Minimum distances for set out*** from edge of substrate material are adhered to in accordance with legislation, regulations and codes of practice.
	2.2. Material is located and temporarily held or fixed into designed position according to detailed drawings.
3. Use EPT.	3.1. EPT is checked for operation according to manufacturer specifications and safety (OHS) requirements for ***use of EPT***.
	3.2. Fastener is selected according to requirements of job.
	3.3. Charge is selected to assessed requirements for material, base and penetration.
	3.4. ***Attachments*** and accessories are installed to EPT in accordance with manufacturer specifications and safety (OHS) requirements.
	3.5. ***Fastener and charge*** in EPT are located to manufacturer specifications.
	3.6. EPT operation is carried out and fastener is fixed into place in accordance with manufacturer recommendations, legislation, regulations and codes

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ELEMENT	PERFORMANCE CRITERIA
	of practice. 3.7. Fastening penetration is checked and appropriate depth into material is applied. 3.8. Power regulating device is adjusted for conditions. 3.9. Misfire procedures are carried out according to manufacturer recommendations, legislation, regulations and codes of practice. 3.10. Temporary holding and fixings are removed without damage to material.
4. Secure and store equipment and charges.	4.1. Charges are stored in designated container in accordance with legislation, regulations and codes of practice and used charges are recorded. 4.2. Unused fasteners, the EPT and attachments are stored in a carry case in line with manufacturer recommendations. 4.3. Logbook is checked and maintenance recorded according to manufacturer recommendations.
5. Maintain EPT and kit.	5.1. Safety features of tools are checked for serviceability in accordance with manufacturer operating manual. 5.2. Tools are cleaned and lubricated to manufacturer recommendations. 5.3. Periodic maintenance service is carried out to manufacturer specifications. 5.4. Diminished stocks of charges and fasteners are replenished to designed effectiveness of EPT kit.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
- documentation from a variety of sources
- drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record maintenance in logbook
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- EPT materials
- EPT charges and fasteners
- equipment safety manuals and instructions
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice

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REQUIRED SKILLS AND KNOWLEDGE

- security and storage procedures for equipment and charges
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment
- communicate and work effectively and safely with others
- fix metal or timber to a steel, concrete or masonry base on one project of each to job specifications, including:
  - completion of stripping and assembly of the tool
  - completing log of serviceability
  - maintaining and cleaning
  - selecting charges and fasteners applicable to base material and material being fixed
  - misfire procedures
  - using attachments
  - complying with storage and security regulations and OHS requirements for the working environment
  - selecting signage
  - test fire.

Context of and specific

This competency is to be assessed using standard

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EVIDENCE GUIDE

resources for assessment	and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.

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Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised

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RANGE STATEMENT

	organisational or external personnel • manufacturer specifications and instructions where specified • memos • MSDS • organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements pertaining to using EPT • relevant Australian standards • safe work procedures related to using EPT • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces

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RANGE STATEMENT

	• working in proximity to others • working with dangerous materials • organisational first aid • personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Tools and equipment include:	• direct action EPT • indirect action EPT • clamps and levels.
Materials include:	• timber • metals • patented fasteners.
Environmental requirements include:	• clean-up management • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Minimum distance for set out of fasteners is to be in accordance with:	• regulated minimum distances • bases, including concrete, masonry or steel.
Use ofEPT includes:	• stripping and assembling tools • completing log of serviceability • maintaining and cleaning tools • selecting charges and fasteners applicable to the base material and material being fixed • misfire procedures • using attachments • complying with storage and security regulations and OHS requirements for the working environment • selecting signage • test fire.
Attachments include:	• channel, rebate and other manufacturer attachments.

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RANGE STATEMENT

Fastener and charge include:	• firing a test shot with misfire procedures, complying with the regulated safety procedure for misfire.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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HLTFA402B Apply advanced first aid

Modification History

Unit Descriptor

This unit deals with the provision of advanced first aid response, life support, management of casualty(s), the incident and other first aiders, until the arrival of medical or other assistance, and provision of support to other providers
This unit builds on HLTFA301B: Apply first aid to include additional skills and use of a range of equipment

Application of the Unit

Training Package users should ensure implementation is consistent with any specific workplace and/or relevant legislative requirements in relation to first aid, including State/Territory requirements for currency
Application of these skills and knowledge should be contextualised as required to address specific industry, enterprise or workplace requirements and to address specific risks and hazards and associated injuries

Licensing/Regulatory Information

Pre-Requisites

Employability Skills Information

The required outcomes described in this unit of competency contain applicable facets of Employability Skills
The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Elements and Performance Criteria Pre-Content

Elements define the essential outcomes of a unit of competency.
The Performance Criteria specify the level of performance required to demonstrate achievement of the Element. Terms in italics are elaborated in the Range Statement.

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Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Assess the situation	1.1 Identify, assess and minimise **hazards** that may pose a risk of injury or illness to self and others
	1.2 Assess **risks** to first aider and others and determine appropriate response to ensure prompt control of situation
	1.3 Ascertain and prioritise need(s) for emergency services/medical assistance and undertake triage where required
	1.4 Deploy **resources** to appropriate locations as required in line with workplace procedures
2 Manage the casualty(s)	2.1 Determine and explain the nature of **casualty's injury/condition** and relevant first aid procedures to provide comfort
	2.2 Respond to the casualty in a culturally aware, sensitive and respectful manner
	2.3 Seek consent for **management** of the casualty's injury/illness from person(s) where relevant
	2.4 Determine and implement welfare procedure according to casualty(s) needs
	2.5 Control effects of injury and determine and apply appropriate **first aid management** to meet the needs of the casualty and situation
	2.6 Assist with **self-medication** in accordance with State/Territory regulations, legislation and policies and manufacturer's/supplier's instructions and subject to casualty's regime
	2.7 Monitor **casualty's condition** and respond in a timely manner in accordance with effective first aid principles
	2.8 Correctly operate basic life support **equipment** where appropriate according to relevant legislation and manufacturer's/supplier's instructions

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		2.9	Apply safety procedures for operation of pressurised gases
		2.10	Use safe manual handling techniques
		2.11	Finalise **management** according to casualty's needs and first aid principles
3	Coordinate first aid activities until arrival of medical assistance	3.1	Identify available **resources** required and establish communication links with appropriate personnel, emergency management services and medical assistance as appropriate
		3.2	Deploy correct amount of **resources** to appropriate locations in an effective manner to ensure timely arrival of required resources
		3.3	Document the provision of resources and recommend modifications as required
		3.4	Monitor the condition of casualties in accordance with first aid principles and workplace procedures
		3.5	Coordinate evacuation of casualties according to relevant evacuation procedures
		3.6	Arrange support services for personnel involved in the incident in accordance with relevant principles and procedures
4	Communicate essential incident details	4.1	Maintain communication with relevant personnel using appropriate media and equipment
		4.2	Communicate first aid information with other providers/carers as appropriate to meet their needs and in accordance with workplace procedures
		4.3	Calmly provide information to reassure casualty, adopting a communication style to match the casualty's level of consciousness
		4.4	Prepare an incident report in line with organisation requirements
		4.5	Maintain confidentiality of records and information in line with privacy principles and statutory and/or organisation policies

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5 Evaluate the incident	5.1 Evaluate management of the incident and where required develop an action plan in consultation with relevant parties
	5.2 Participate in debriefing/evaluation in order to improve future operations and address individual's needs
	5.3 Formulate and review contingency planning to identify and select alternative management principles and procedures as required

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Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit.

Essential knowledge:

Working knowledge of:

legal responsibilities and duty of care, including confidentiality

basic anatomy (skeleton, muscles, joints, bones), physiology and toxicology

ARC Guidelines and/or State/Territory regulations, legislation and policies relating to provision of first aid

procedures for dealing with major and minor accidents in the workplace

infection control principles and procedures, including using standard precautions

how to gain access to and interpret material safety data sheets (MSDSs)

company/organisation standard operating procedures (SOPs)

priorities of management in first aid

occupational health and safety requirements in the provision of first aid.

capabilities of emergency management services

first aiders' skills and limitations

safe storage and handling procedures for pressurised gases

advanced resuscitation techniques as per **HLTFA404A Apply advanced resuscitation techniques**

First aid management procedures in accordance with ARC Guidelines, state/territory regulations, legislation and policies and organisation requirements for conditions identified in the Range Statement and including:

use of AED, oxygen, bronchodilator

spinal care

management of anaphylactic shock reaction

use of analgesic gases

Incident management procedures:

manual handling, hazardous substances, dangerous goods or chemicals

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basic triage for a multiple casualty incident

safe access to the casualty

awareness of confined spaces and dangerous places

removal of casualty to safe area, if appropriate

coordinate activities of other first aiders, if applicable

First aid management procedures may also relate to emergency childbirth

Complications and associated methods of management for conditions identified in the Range Statement

State and territory regulatory requirements relating to currency of skill and knowledge

Social issues, especially in particular workplace or community context(s) in which first aid is to be applied, including:

importance of debriefing

need to be culturally aware, sensitive and respectful

confidentiality

own skills and limitations

Awareness of stress management techniques and available support

Safety procedures for the operation of pressurised gases

Essential skills:

Ability to:

Manage specific injuries/illnesses and conditions as identified in the Range Statement for this competency unit

Conduct an initial casualty assessment

Plan an appropriate first aid response in line with established first aid principles, policies and procedures, ARC Guidelines and/or State/Territory regulations, legislation and policies and industry requirements and respond appropriately to contingencies in line with own skills

Apply advanced resuscitation techniques as per **HLTFA404A Apply advanced resuscitation techniques**

Use a range of first aid equipment as outlined in the Range Statement

Demonstrate the application of first aid principles

Comply with OHS legislation

Provide assistance with self-medication as per subject's own medication regime and in line with State/Territory legislation, regulations and policies and any available

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medical/pharmaceutical instructions

Administer medication in line with State/Territory regulations, legislation and policies and any available medical/pharmaceutical instructions

Demonstrate:

safe manual handling

adequate infection control procedures

consideration of the welfare of the casualty

safe storage and handling procedures for pressurised gases

Prepare a written incident report or provide information to enable preparation of an incident report

Interpret and use listed documents

Communicate effectively and assertively and show leadership in an incident

Make prompt and appropriate decisions relating to managing an incident in the workplace

Use literacy and numeracy skills as required to read, interpret and apply guidelines and protocols

Call an ambulance and/or medical assistance according to relevant circumstances and report casualty's condition

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

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Critical aspects of assessment:

Assessment must include demonstrated evidence of specified Essential Knowledge and Essential Skills identified in this competency unit

Competence should be demonstrated working individually and, where appropriate, as part of a first aid team

Consistency of performance should be demonstrated over the required range of situations relevant to the workplace or community setting

Currency of first aid knowledge and skills is to be demonstrated in line with state/territory regulations, legislation and policies, ARC and industry guidelines

Method of assessment may include:

Skills in performing first aid procedures are to be assessed through demonstration, with questioning to confirm essential knowledge

Skills may be assessed through simulations, using anatomical models, manikins or in a high fidelity simulation centre

For assessment purposes, demonstration of skills in CPR procedures requires using a model of the human body (resuscitation manikin) in line with ARC Guidelines

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Access and equity considerations:	All workers in the health industry should be aware of access and equity issues in relation to their own area of work All workers should develop their ability to work in a culturally diverse environment In recognition of particular health issues facing Aboriginal and Torres Strait Islander communities, workers should be aware of cultural, historical and current issues impacting on health of Aboriginal and Torres Strait Islander people Assessors and trainers must take into account relevant access and equity issues, in particular relating to factors impacting on health of Aboriginal and/or Torres Strait Islander clients and communities

Range Statement

RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Contextualisation to address specific requirements may include:	Focus on first aid management of specific types of injury First aid provision under specific constraints or circumstances (eg. in confined spaces, in maritime work environment or in work environment involving identified risks/hazards)

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First aid management must take into account:	Workplace policies and procedures Industry/site specific regulations, codes etc. OHS requirements State and territory workplace health and safety requirements
A hazard is:	A source or situation with the potential for harm in terms of human injury or ill-health, damage to property, the environment, or a combination of these
Hazards may include:	Physical hazards Biological hazards Chemical hazards Hazards associated with manual handling
Risks may include:	Risks from worksite equipment, machinery and substances Risks from first aid equipment (oxygen cylinders, AED) Environmental risks Exposure to blood and other body substances Risk of further injury to the casualty Risks associated with the proximity of other workers and bystanders Risks from vehicles Fallen power lines, step and touch potential

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Casualty's condition is managed for:

Abdominal injuries

Airway obstruction

Allergic reactions

Altered and loss of consciousness

Bleeding

Burns - thermal, chemical, friction, electrical

Chest pain

Injuries: cold and crush injuries; eye and ear injuries; head, neck and spinal injuries; minor skin injuries; needle stick injuries; soft tissue injuries including sprains, strains, dislocations

Near drowning

Envenomation - snake, spider, insect and marine bites

Environmental conditions such as hypothermia, hyperthermia, dehydration, heat stroke

Fractures

Medical conditions, including cardiac conditions, epilepsy, diabetes, asthma and other respiratory conditions

No signs of life

Pain relief

Poisoning and toxic substances (including chemical contamination)

Respiratory distress

Shock

Seizures

Stroke

Substance misuse - all drugs and alcohol, including illicit drugs

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First Aid management skills must include in accordance with ARC Guidelines, State/Territory regulations, legislation and policies and industry requirements:	Administration of analgesia CPR Infection control AED Identification and management of anaphylactic shock reaction in accordance with ARC Guidelines, State/Territory regulations, legislation and policies and industry requirements Oxygen administration
First aid management must account for:	Location and nature of the workplace Environmental conditions eg electricity (high or low voltage), biological risks, weather, motor vehicle accidents Location of emergency services personnel Number of casualties and potential casualties Use and availability of first aid equipment, resources and pharmaceuticals Types of dangers/risks to the casualty and any others in the vicinity of the situation Confined spaces, subject to industry need
Medications may include in accordance with ARC Guidelines, State/Territory regulations, legislation and policies and industry requirements:	Oxygen Analgesics Bronchodilators Casualty's own medications Auto-injectors

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Resources and equipment are used appropriate to the risk to be met and may include:	Oxygen resuscitation/cylinders AED Thermometers Auto-injectors Back boards Stretchers Soft bag resuscitator First aid kit Casualty's medication Analgesic inhalers Analgesic gas equipment Resuscitation mask or barrier Spacer device Cervical collars

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Information to be documented may include:	Time Location Description of injury First aid management Fluid intake/output, including fluid loss via: blood vomit faeces urine Administration of medication including: time date person administering dose Vital signs
Established first aid principles include:	Checking the site for danger to self, the casualty and others and minimising the danger Checking and maintaining the casualty's airway, breathing and circulation

Unit Sector(s)

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CPPSIS3006A Provide field support services

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to provide field support services. It requires the ability to work with others on site to perform key organisational requirements within a spatial information services framework, working from site drawings and specifications. Functions would be carried out under supervision, often in a team environment, and within organisational guidelines.

Application of the Unit

Application of the unit

This unit of competency supports the application of communication, interpersonal and teamwork skills, and the use of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in the spatial information services industry sector in positions such as field coordination and data collection.

While no licensing, legislative, regulatory or certification requirements apply holistically to this unit at the time of publication, relevant federal, and state or territory legislation, regulations and codes of practice impact upon this unit (see unit performance criteria and range statement).

Licensing/Regulatory Information

Refer to Application of the Unit

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged, will assist in identifying employability skills requirements.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1Plan and prepare for support task.	1.1 Requirements of the job are clarified with ***relevant personnel*** according to ***organisational guidelines***.
	1.2 Tools, ***equipment and supplies*** appropriate to the environment are selected and prepared according to ***specifications***.
	1.3 Safety requirements for the protection of site personnel, the public and the environment are determined.
	1.4 Plans are examined to determine the location of services.
	1.5 ***Personal protective equipment*** is used according to ***OHS*** guidelines.
	1.6 Skills and knowledge are updated to accommodate changes in field support services.
2Execute support tasks.	2.1 Barricades, protective works and signs are erected, when required according to organisational guidelines.
	2.2 Surface positions are determined and marked according to ***accepted standards*** using information available from site drawings and references, and relevant personnel.
	2.3 ***Support tasks*** are carried out under direction and according to specifications.
	2.4 Skills and knowledge are updated to accommodate changes in equipment and operating procedures.
3Finalise the task.	3.1 Site is restored as near as practicable to original condition.
	3.2 Tools and equipment are cleaned and stored in a secure location.
	3.3 Repair work is organised for unsafe or faulty tools and equipment.
	3.4 All required ***spatial business documentation*** is completed accurately and promptly according to organisational guidelines.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the essential skills and knowledge and their level, required for

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REQUIRED SKILLS AND KNOWLEDGE

this unit.

Required skills:

- ability to relate to people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities
- ability to select and use tools appropriately
- communication skills to:
  - discuss vocational issues effectively with colleagues
  - impart knowledge and ideas through oral, written and visual means
- computer skills
- first aid (basic)
- interpersonal skills e.g. cooperation and flexibility
- literacy skills to:
  - assess and use workplace information
  - interpret and understand legal, financial and procedural requirements
  - process workplace documentation
  - read and record data
- numeracy skills to:
  - accurately record and collate
  - undertake basic computations
- organisational skills to prioritise daily activities
- spatial skills to apply understanding of height, depth, breadth, dimension and position to actual operational activity and virtual representation
- technological skills (basic)
- time management skills.

Required knowledge and understanding:

- industry ethics and practices
- legislation as it applies to the spatial information services industry sector (basic)
- OHS requirements
- safe work practices
- spatial data measuring and recording
- work allocation procedures.

Evidence Guide

EVIDENCE GUIDE

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The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment	This unit of competency could be assessed on its own or in combination with other units relevant to the job function, for example units CPPSIS3007A Select, operate and maintain equipment and supplies, and CPPSIS3008A Transfer personnel and loads.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of: • carrying out task instructions • demonstrating critical aspects of working safely • managing basic risk • providing support in determining and marking positions • understanding the nature of spatial projects.
Specific resources for assessment	Resource implications for assessment include access to: • assessment instruments, including personal planner and assessment record book • assignment instructions, work plans and schedules, policy documents and duty statements • registered training provider of assessment services • relevant guidelines, regulations and codes of practice • suitable venue and equipment. Access must be provided to appropriate learning and assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.
Context of assessment	Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.
Method of assessment	Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment). Demonstrated competency in a range of situations, that may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace. Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation in realistic simulated environments may be

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substituted.

Guidance information for assessment

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of spatial information services requirements to assess competency.

Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical).

Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff.

All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory.

Where assessment is for the purpose of recognition (recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.

Assessment processes will be appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Relevant personnel may include:

- colleagues
- staff or employee representatives
- supervisors or line managers
- suppliers
- users.

Organisational guidelines may include:

- code of ethics
- company guidelines
- legislation relevant to the work or service function, including equal employment opportunity (EEO)
- manuals
- OHS policies and procedures
- personnel practices and guidelines outlining work roles and responsibilities.

Equipment and supplies may include:

- data recording equipment
- measuring instruments
- personal computer-based digitising boards
- tools
- vehicles.

Specifications may include:

- budget
- data capture methods
- personnel required
- project deliverables
- resources needed
- timelines.

Personal protective equipment may include:

- breathing apparatus
- gloves
- helmets
- overalls
- masks and respirators
- safety boots
- safety glasses
- safety vests

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	• sun protection equipment.
OHS may include:	• Australian standards • development of site safety plan • identification of potential hazards • inspection of work sites • training staff in OHS requirements • use of equipment and signage.
Accepted standards may include:	• Environment Protection Authority (EPA) recommendations • state, territory and federal legislative requirements • manufacturer instructions and specifications • OHS standards • organisational guidelines • relevant industry codes of practice.
Support tasks may include:	• equipment maintenance • identifying, determining and marking positions • obtaining supplies • recording data • driving.
Spatial business documentation may include:	• databases • detailed technical description of the spatial data and its qualifiers • emails and faxes • quotations and estimates • standard letters • tax invoices • statements.

Unit Sector(s)

Unit sector	Spatial information services

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BSBWOR203A Work effectively with others

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to work in a group environment promoting team commitment and cooperation, supporting team members and dealing effectively with issues, problems and conflict. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals who perform a range of routine tasks using a limited range of practical skills and fundamental knowledge of teamwork in a defined context under direct supervision or with limited individual responsibility.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop effective workplace relationships	1.1. Identify own ***responsibilities and duties*** in relation to ***workgroup members*** and undertake activities in a manner that promotes cooperation and good relationships 1.2. Take time and resource constraints into account in fulfilling work requirements of self and others 1.3. Encourage, acknowledge and act upon constructive ***feedback*** provided by others in the workgroup
2. Contribute to workgroup activities	2.1. Provide ***support to team members*** to ensure workgroup goals are met 2.2. Contribute constructively to workgroup goals and tasks according to organisational requirements 2.3. Share ***information*** relevant to work with workgroup to ensure designated goals are met 2.4. Identify and plan ***strategies***/***opportunities for improvement*** of workgroup in liaison with workgroup
3. Deal effectively with issues, problems and conflict	3.1. Respect differences in personal values and beliefs and their importance in the development of relationships 3.2. Identify any linguistic and cultural differences in communication styles and respond appropriately 3.3. Identify issues, problems and conflict encountered in the workplace 3.4. Seek assistance from workgroup members when issues, problems and conflict arise and suggest possible ways of dealing with them as appropriate or refer them to the appropriate person

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- literacy skills to read and understand the organisation's policies and work procedures, to write simple instructions for particular routine tasks and to interpret information gained from correspondence
- communication skills to request advice, to receive feedback and to work with a team
- technology skills to select and use technology appropriate to a task
- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety (OHS)
- organisational policies, plans and procedures
- workgroup member responsibilities and duties, and relationship to individual responsibilities and duties.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • providing support to team members to ensure goals are met • seeking feedback from clients and/or colleagues and taking appropriate action • knowledge of appropriate conflict resolution techniques.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of customer complaints or staff conflict.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • analysis of responses to case studies and scenarios • demonstration of techniques • observation of demonstrated techniques in resolving conflict • observation of presentations • review of documentation identifying and planning strategies/opportunities for workgroup improvement.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • interpersonal communication units • other industry capability units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Responsibilities and duties may include:	• Code of Conduct • job description and employment arrangements • organisation's policy relevant to work role • skills, training and competencies • supervision and accountability requirements including OHS • team structures
Workgroup members may include:	• coach/mentor • other members of the organisation • peers/work colleagues/team/enterprise • supervisor or manager
Feedback on performance may include:	• formal/informal performance appraisals • obtaining feedback from clients • obtaining feedback from supervisors and colleagues • personal, reflective behaviour strategies • routine organisational methods for monitoring service delivery
Support to team members may include:	• explaining/clarifying • helping colleagues • problem-solving • providing encouragement • providing feedback to a team member • undertaking extra tasks if necessary
Information to be shared may include:	• acknowledging satisfactory performance • acknowledging unsatisfactory performance • assisting a colleague • clarifying the organisation's preferred task completion methods • encouraging colleagues • open communication channels • workplace hazards, risks and controls

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RANGE STATEMENT	
Strategies*/*opportunities for improvement may include:	• career planning/development • coaching, mentoring and/or supervision • formal/informal learning programs • internal/external training provision • performance appraisals • personal study • recognition of current competence (RCC)/skills recognition/initial assessment • work experience/exchange/opportunities • workplace skills assessment

Unit Sector(s)

Unit sector	

Competency field

Competency field	Industry Capability - Workplace Effectiveness

Co-requisite units

Co-requisite units		

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ICAU3126B Use advanced features of computer applications

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit defines the competency required to use computer applications employing advanced features. The following unit is linked and forms an appropriate cluster: • ICAB3018B Develop macros and templates for clients using standard products No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit	

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Manipulate data	1.1. Employ advanced features of ***applications*** in the preparation and presentation of data 1.2. Efficiently transfer data between ***applications***, linking and embedding related data files as required 1.3. Create and employ ***objects***, macros and templates for routine activities 1.4. Use shortcuts and features to increase personal productivity
2. Access and use support resources	2.1. Solve routine problems using support resources 2.2. Use on-line help to overcome difficulties with ***applications*** 2.3. Solve problems with manuals and training booklets 2.4. Access and apply technical support for ***system*** problems, utilising troubleshooting results and alert messages

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• Basic analysis skills in relation to normal routine work processes • Detailed skills in using applications features • Basic skills in interpreting technical information • Problem solving skills in known areas during normal routine work processes • Plain English literacy and communication skills in relation to dealing with clients and team members
Required knowledge
• Basic understanding of operating systems software and system tools • Broad knowledge of vendor product directions • Broad knowledge of vendor applications and their features

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • Assessment must confirm the ability to use at least three computer applications to their full capacity employing all advanced features and import/export capacities for efficiency and productivity purposes, using at least two industry-recognised application packages. To demonstrate competency in this unit the person will require access to: • Personal computer • Documents or information containing data suitable for use with multiple computing packages
Context of and specific resources for assessment	The use of advanced features of computer applications is increasing as workplaces recognise the full potential and functionality of contemporary commercial applications. Individuals demonstrating this competency would be considered user experts or advanced users and would be capable of tutoring colleagues in the use of commercial applications. The breadth, depth and complexity of knowledge and skills in this competency would cover selecting, adapting and transferring skills and knowledge to new environments and providing technical advice and some leadership in resolution of specified problems. This would be applied across a range of roles in a variety of contexts with some complexity in the extent and choice of options available. Assessment must ensure: • Performance of a defined range of skilled operations, usually within a range of broader related activities involving known routines, methods and procedures,

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EVIDENCE GUIDE	
	where some discretion and judgement is required in the section of equipment, services or contingency measures and within known time constraints would be characteristic. • Applications may involve some responsibility for others. Participation in teams including group or team coordination may be involved.
Method of assessment	The purpose of this unit is to define the standard of performance to be achieved in the workplace. In undertaking training and assessment activities related to this unit, consideration should be given to the implementation of appropriate diversity and accessibility practices in order to accommodate people who may have special needs. Additional guidance on these and related matters is provided in ICA05 Section 1. • Competency in this unit should be assessed using summative assessment to ensure consistency of performance in a range of contexts. This unit can be assessed either in the workplace or in a simulated environment. However, simulated activities must closely reflect the workplace to enable full demonstration of competency. • Assessment will usually include observation of real or simulated work processes and procedures and/or performance in a project context as well as questioning on underpinning knowledge and skills. The questioning of team members, supervisors, subordinates, peers and clients where appropriate may provide valuable input to the assessment process. The interdependence of units for assessment purposes may vary with the particular project or scenario.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • ICAB3018B Develop macros and templates for clients using standard products

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EVIDENCE GUIDE	
	An individual demonstrating this competency would be able to: • Demonstrate some relevant theoretical knowledge • Apply a range of well-developed skills • Apply known solutions to a variety of predictable problems • Perform processes that require a range of well-developed skills where some discretion and judgement is required • Interpret available information, using discretion and judgement • Take responsibility for own outputs in work and learning • Take limited responsibility for the output of others • Maintain knowledge of industry products and services

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Applications	• May include but are not limited to commercial software applications; organisation-specific software; word processing, spreadsheet, database, graphic, communication packages and presentation functionalities. • May include presentation applications contained in: Microsoft Office, Lotus Suite, Claris Works, Star Office or other similar applications.
Objects may include:	• buttons • checkboxes • option buttons • text boxes

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RANGE STATEMENT	
	• drop down lists
System may include but is not limited to:	• network • application • software • business • computers • financial system • management system • information system

Unit Sector(s)

Unit sector	Use

Co-requisite units

Co-requisite units		

Competency field

Competency field	

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HLTFA301B Apply first aid

Modification History

Unit Descriptor

This unit of competency describes the skills and knowledge required to provide first aid response, life support, management of casualty(s), the incident and other first aiders, until the arrival of medical or other assistance

Application of the Unit

These skills and knowledge may be applied in a range of situations, including community and workplace settings
Training Package users should ensure implementation is consistent with any specific workplace and/or relevant legislative requirements in relation to first aid, including State/Territory requirements for currency
Application of these skills and knowledge should be contextualised as required to address specific industry, enterprise or workplace requirements and to address specific risks and hazards and associated injuries
A current Senior First Aid, Workplace Level 2 or Level 2 qualification may provide evidence of skills and knowledge required by this competency unit. However, as with all evidence of competence, evidence must be assessed against the requirements specified in the competency unit

Licensing/Regulatory Information

Pre-Requisites

Employability Skills Information

The required outcomes described in this unit of competency contain applicable facets of Employability Skills
The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Elements and Performance Criteria Pre-Content

Elements define the essential outcomes of a unit of competency.
The Performance Criteria specify the level of performance required to demonstrate achievement of the Element. Terms in italics are elaborated in the Range Statement.

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Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Assess the situation	1.1 Identify assess and minimise **hazards** in the situation that may pose a risk of injury or illness to self and others
	1.2 Minimise immediate **risk** to self and casualty's health and safety by controlling any hazard in accordance with occupational health and safety requirements
	1.3 Assess casualty and identify injuries, illnesses and conditions
2 Apply first aid procedures	2.1 Calmly provide information to reassure casualty, adopting a communication style to match the casualty's level of consciousness
	2.2 Use available **resources and equipment** to make the casualty as comfortable as possible
	2.3 Respond to the casualty in a culturally aware, sensitive and respectful manner
	2.4 Determine and explain the nature of casualty's injury/condition and relevant first aid procedures to provide comfort
	2.5 Seek consent from casualty prior to applying first aid management
	2.6 Provide **first aid management** in accordance with **established first aid principles** and Australian Resuscitation Council (ARC) Guidelines and/or State/Territory regulations, legislation and policies and industry requirements
	2.7 Seek first aid assistance from others in a timely manner and as appropriate
	2.8 Correctly operate first aid equipment as required for first aid management according to manufacturer/supplier's instructions and local policies and/or procedures

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		2.9	Use safe manual handling techniques as required
		2.10	Monitor **casualty's condition** and respond in accordance with effective first aid principles and procedures
		2.11	Finalise casualty management according to casualty's needs and first aid principles
3	Communicate details of the incident	3.1	Request ambulance support and/or appropriate medical assistance according to relevant circumstances using relevant **communication media and equipment**
		3.2	Accurately convey assessment of casualty's condition and management activities to ambulance services /other emergency services/relieving personnel
		3.3	Prepare reports as appropriate in a timely manner, presenting all relevant facts according to established procedures
		3.4	Accurately record details of casualty's physical condition, changes in conditions, management and response to management in line with established procedures
		3.5	Maintain confidentiality of records and information in line with privacy principles and statutory and/or organisation policies
4	Evaluate own performance	4.1	Seek feedback from **appropriate clinical expert**
		4.2	Recognise the possible psychological impacts on rescuers of involvement in critical incidents
		4.3	Participate in debriefing/evaluation as appropriate to improve future response and address individual needs

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Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit.

Essential knowledge:

ARC Guidelines relating to provision of first aid as outlined

Working knowledge of:

basic principles and concepts underlying the practice of first aid

procedures for dealing with major and minor injury and illness

priorities of management in first aid when dealing with life threatening conditions

basic occupational health and safety requirements in the provision of first aid

infection control principles and procedures, including use of standard precautions

chain of survival

first Aiders' skills and limitations

Understanding of the use of an Automated External Defibrillator (AED), including when to use and when not to

First aid management of:

abdominal injuries

allergic reactions

altered and loss of consciousness

bleeding

burns - thermal, chemical, friction, electrical

cardiac arrest

casualty with no signs of life

chest pain

choking/airway obstruction

injuries: cold and crush injuries; eye and ear injuries; head, neck and spinal injuries; minor skin injuries; needle stick injuries; soft tissue injuries including sprains, strains, dislocations

envenomation - snake, spider, insect and marine bites

environmental impact such as hypothermia, hyperthermia, dehydration, heat stroke

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fractures

medical conditions, including cardiac conditions, epilepsy, diabetes, asthma and other respiratory conditions

near drowning

poisoning and toxic substances (including chemical contamination)

respiratory distress

seizures

shock

stroke

substance misuse - common drugs and alcohol, including illicit drugs

Awareness of stress management techniques and available support

Social/legal issues:

duty of care

need to be culturally aware, sensitive and respectful

importance of debriefing

confidentiality

own skills and limitations

Essential skills:

Ability to:

Conduct an initial casualty assessment

Plan an appropriate first aid response in line with established first aid principles, policies and procedures, ARC Guidelines and/or State/Territory regulations, legislation and policies and industry requirements and respond appropriately to contingencies in line with own skills

Demonstrate correct procedures for performing CPR using a manikin, including standard precautions (i.e. as per unit **HLTCPR201A Perform CPR**)

Apply first aid principles

Infection control, including use of standard precautions

Follow OH&S guidelines

Demonstrate:

safe manual handling

consideration of the welfare of the casualty

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ability to call an ambulance

site management to prevent further injury

Provide assistance with self-medication as per subject's own medication regime and in line with State/Territory legislation, regulations and policies and any available medical/pharmaceutical instructions

Administer medication in line with state/territory regulations, legislation and policies

Prepare a written incident report or provide information to enable preparation of an incident report

Communicate effectively and assertively in an incident

Make prompt and appropriate decisions relating to managing an incident in the workplace

Call an ambulance and/or medical assistance according to relevant circumstances and report casualty's condition

Use literacy and numeracy skills as required to read, interpret and apply guidelines and protocols

Evaluate own response and identify appropriate improvements where required

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package. The evidence guide supplements assessment requirements that apply to all units in this Training Package. Users of this evidence guide should first read the package's assessment guidelines.

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Critical aspects of assessment:	Assessment must include demonstrated evidence of specified Essential Knowledge and Essential Skills identified in this competency unit Competence should be demonstrated working individually and, where appropriate, as part of a first aid team Consistency of performance should be demonstrated over the required range of situations relevant to the workplace or community setting Currency of first aid knowledge and skills is to be demonstrated in line with State/Territory regulations, legislation and policies, ARC and industry guidelines
Context and resources required for assessment:	Skills in performing first aid procedures are to be assessed through demonstration, with questioning to confirm essential knowledge For assessment purposes, demonstration of skills in CPR procedures requires using a model of the human body (resuscitation manikin) in line with Australian Resuscitation Council Guidelines

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Access and equity considerations:	All workers in the health industry should be aware of access and equity issues in relation to their own area of work All workers should develop their ability to work in a culturally diverse environment In recognition of particular health issues facing Aboriginal and Torres Strait Islander communities, workers should be aware of cultural, historical and current issues impacting on health of Aboriginal and Torres Strait Islander people Assessors and trainers must take into account relevant access and equity issues, in particular relating to factors impacting on health of Aboriginal and/or Torres Strait Islander clients and communities

Range Statement

RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Contextualisation to address specific requirements may include:	Focus on first aid management of specific types of injury First aid provision under specific constraints or circumstances (e.g. in confined spaces, in maritime work environment or in work environment involving identified risks/hazards)

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Established first aid principles include:	Preserve life Prevent illness, injury and condition(s) becoming worse Promote recovery Protect the unconscious casualty
Vital signs include:	Consciousness Breathing Circulation
A hazard is:	A source or situation with the potential for harm in terms of human injury or ill-health, damage to property, the environment, or a combination of these
Hazards may include:	Physical hazards Biological hazards Chemical hazards Hazards associated with manual handling
Risks may include:	Risks from equipment, machinery and substances Risks from first aid equipment Environmental risks Exposure to blood and other body substances Risk of further injury to the casualty Risks associated with the proximity of other workers and bystanders Risks from vehicles

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Casualty's condition is managed for:

Abdominal injuries

Airway obstruction

Allergic reactions

Altered and loss of consciousness

Bleeding

Burns - thermal, chemical, friction, electrical

Chest pain/cardiac arrest

Injuries: cold and crush injuries; eye and ear injuries; head, neck and spinal injuries; minor skin injuries; needle stick injuries; soft tissue injuries including sprains, strains, dislocations

Near drowning

Envenomation - snake, spider, insect and marine bites

Environmental conditions such as hypothermia, hyperthermia, dehydration, heat stroke

Fractures

Medical conditions, including cardiac conditions, epilepsy, diabetes, asthma and other respiratory conditions

No signs of life

Poisoning and toxic substances (including chemical contamination)

Respiratory distress/arrest

Seizures

Shock

Stroke

Substance misuse - common drugs and alcohol, including illicit drugs.

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First aid management must take into account applicable aspects of:	The setting in which first aid is provided, including: workplace policies and procedures industry/site specific regulations, codes etc. OHS requirements state and territory workplace health and safety legislative requirements location and nature of the incident situational risks associated with, for example, electrical and biological hazards, weather, motor vehicle accidents location of emergency services personnel. The use and availability of first aid equipment and resources Infection control Legal and social responsibilities of first aider
Resources and equipment are used appropriate to the risk to be met and may include:	AED First aid kit Auto-injector Puffer/inhaler Resuscitation mask or barrier Spacer device

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Communication media and equipment may include but are not limited to:	Telephones, including landline, mobile and satellite phones HF/VHF radio Flags Flares Two way radio Email Electronic equipment Hand signals
Appropriate clinical expert may include:	Supervisor/manager Ambulance officer/paramedic Other medical/health worker
Documentation may include:	Injury report forms Workplace documents as per organisation requirements

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Documentation may include recording:

Time

Location

Description of injury

First aid management

Fluid intake/output, including fluid loss via:

blood

vomit

faeces

urine

Administration of medication including:

time

date

person administering

dose

Vital signs

Unit Sector(s)

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